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Foreword

Math Mammoth Grade 3, Canadian Version, comprises a complete math curriculum for the third grade mathematics studies. This curriculum is essentially the same as the U.S. version of Math Mammoth Grade 3, only customized for Canadian audiences in a few aspects (listed below). The curriculum meets the Common Core Standards in the United States, but it may not perfectly align to the third grade standards in your province (it will more likely match with various 4th grade Canadian standards).

The Canadian version of Math Mammoth has been customized for Canadian audiences in these aspects:

- The currency used in the money chapter (chapter 6) is the Canadian dollar. (The download version of the curriculum also includes this chapter for the U.S., British, European, South African, Australian, and New Zealand currencies.)
- The curriculum uses only metric measurement units.
- The spelling conforms mostly to American English, taking into account a few key differences where where Canadian English follows British English.
- Large numbers are formatted with a space as the thousands separator (such as 12 394). (Decimals are formatted with a decimal point, as in the US version.)
- The pages are formatted for Letter-size paper.

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

1. Students develop an understanding of multiplication and division of whole numbers through problems involving equal-sized groups, arrays and area models. They learn the relationship between multiplication and division, and solve many word problems involving multiplication and division (chapters 3, 4 and 8).
2. Students develop an understanding of fractions, beginning with unit fractions. They compare fractions by using visual models and strategies based on noticing equal numerators or denominators (chapter 11).
3. Students learn the concepts of area and perimeter. They relate area to multiplication and to addition, recognize perimeter as a linear measure (in contrast with area) and solve problems involving area and perimeter (chapter 10).
4. Students fluently add and subtract within 1000, both mentally and in columns. They also learn to add and subtract four-digit numbers, and use addition and subtraction in problem solving in many contexts, such as with money, time, and geometry (chapters 1, 2 and 7).

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

This book, 3-A, covers addition and subtraction (chapters 1-2), the concept of multiplication (chapter 3), the multiplication tables (chapter 4), time (chapter 5) and money (chapter 6). The rest of the topics are in the 3-B worktext.

I heartily recommend that you read the full user guide in the following pages.

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 third grade, I suggest studying chapters 1-4 in order, but you can be flexible with the other chapters and schedule them earlier or later.

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 hundreds 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 judgment, trying to assign just enough for your student’s needs. You can use the skipped exercises later for review. For most students, I recommend to start out by assigning about half of the available exercises. Adjust as necessary.
- Each chapter introduction contains a **list of links to various free online games** and activities. These games can be used to supplement the math lessons, for learning math facts, or just for some fun.
- The student books contain some **mixed review lessons**, and the curriculum also provides you with additional **cumulative review 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. This is a single html file. You will need Internet access to be able to use it.
- 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** to make fraction manipulatives or geometric solids.
- And of course there are answer keys to everything.

How to get started

Have ready the first lesson from the student worktext. Go over the first teaching part (within the blue boxes) 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 students can eventually study the lessons completely on their own — the curriculum becomes self-teaching. However, students definitely vary in how much they need someone to be there to actually teach them.

Pacing the curriculum

Each chapter introduction contains a suggested pacing guide for that chapter. You will see a summary on the right. (This summary does not include time for optional tests.)

Most lessons are 2 or 3 pages long, intended for one day. Some 3-page lessons can take two days. Some lessons are 4-5 pages and can be covered in two days. There are also a few optional lessons (not included in the tables on the right).

It can also be helpful to calculate a general guideline as to how many pages per week the student should cover in order to go through the curriculum in one school year.

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 (36-week) school year. The page count in the table below *includes* the optional lessons.

Example:

| Grade level | School days | Days for tests and reviews | Lesson pages | Days for the student book | Pages to study per day | Pages to study per week |
|---------------|-------------|----------------------------|--------------|---------------------------|------------------------|-------------------------|
| 3-A | 93 | 12 | 209 | 86 | 2.43 | 12.2 |
| 3-B | 87 | 10 | 175 | 72 | 2.43 | 12.2 |
| Grade 3 total | 180 | 22 | 384 | 158 | 2.43 | 12.2 |

The table below is for you to fill in. Allow several days for tests and additional review before tests — I suggest at least twice the number of chapters in the curriculum. Then, to get a count of “pages to study per day”, **divide the number of lesson pages by the number of days for the student book**. Lastly, multiply this number by 5 to get the approximate page count to cover in a week.

| Grade level | Number of school days | Days for tests and reviews | Lesson pages | Days for the student book | Pages to study per day | Pages to study per week |
|---------------|-----------------------|----------------------------|--------------|---------------------------|------------------------|-------------------------|
| 3-A | | | | | | |
| 3-B | | | | | | |
| Grade 3 total | | | | | | |

| Worktext 3-A | |
|--------------|----------------|
| Chapter 1 | 10 days |
| Chapter 2 | 14 days |
| Chapter 3 | 13 days |
| Chapter 4 | 19 days |
| Chapter 5 | 14 days |
| Chapter 6 | 10 days |
| TOTAL | 80 days |

| Worktext 3-B | |
|--------------|----------------|
| Chapter 7 | 11 days |
| Chapter 8 | 15 days |
| Chapter 9 | 8 days |
| Chapter 10 | 22 days |
| Chapter 11 | 15 days |
| TOTAL | 71 days |

Now, something important. Whenever the curriculum has lots of similar practice problems (a large set of problems), feel free to **only assign 1/2 or 2/3 of those problems**. If your student gets it with less amount of exercises, then that is perfect! If not, you can always assign the rest of the problems for some other day. In fact, you could even use these unassigned problems the next week or next month for some additional review.

In general, 1st-2nd graders might spend 25-40 minutes a day on math. Third-fourth graders might spend 30-60 minutes a day. Fifth-sixth graders might spend 45-75 minutes a day. If your student finds math enjoyable, they 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 student's attitude towards math.

Working space, the usage of additional paper and mental math

The curriculum generally includes working space directly on the page for students to work out the problems. However, feel free to let your students 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 organize 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 MATH.

However, there are some students who struggle with mental math (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 to enjoy learning math.

Students struggling with mental math 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 math 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 as PDF files. You can edit them (such as to change the numbers in them) to provide a different test using PDF apps that have editing capabilities. You can even use the annotation tools (such as text boxes) available in most PDF apps. 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.

Using cumulative reviews and the worksheet maker

The student books contain mixed review lessons which review concepts from earlier chapters. The curriculum also comes with additional cumulative review lessons, which are just like the mixed review lessons 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 Reviews book in the print version.

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

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

Both the mixed and cumulative reviews 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 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 math 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 contains lots of word problems, and they are usually multi-step problems. Several of the lessons utilize a bar model for solving 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 you use the free Math Stars problem-solving newsletters as one of the main resources for puzzles and challenging problems:

Math Stars Problem Solving Newsletter (grades 1-8)

<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: you can find puzzles online by searching 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>

If the FAQ does not cover your question, you can then contact us using the contact form at the Math Mammoth.com website.

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

Chapter 1: Addition and Subtraction

Introduction

This first chapter of *Math Mammoth Grade 3* focuses on mental math, word problems and patterns.

The beginning lessons give a review of basic addition and subtraction facts, plus a review of some mental math strategies from second grade, so that even students who perhaps did not study mental math in earlier grades can now catch up. The rest of the lessons have to do with third grade topics (word problems, patterns).

Students practise writing an equation with an unknown for two-step word problems. This is a challenging topic that will be practised throughout several chapters. In this chapter, the problems include only additions and subtractions. Later in third grade, the problems will also include multiplication and division. Students continue with this topic in fourth grade when they work on multi-step word problems in the same manner, and their work here is foundational to writing equations to solve problems and to model situations with mathematics in all grade levels, including in algebra.

The lessons on the concept of difference and on the connection between addition and subtraction have to do with algebraic thinking, and are also intended to help students with writing equations for the word problems.

Please see the user guide in the beginning of the worktext or at <https://www.mathmammoth.com/userguides/> for more guidance on using and pacing the curriculum.

Keep in mind the free videos that match the curriculum at <https://www.mathmammoth.com/videos/>.

Good Mathematical Practices

- Sometimes an elementary math problem is better solved with mental math, and sometimes with paper and pencil calculations. This chapter focuses on mental math, enabling students to use it as an efficient tool in many future math problems.
- One focus of this chapter is word problems and writing an equation with an unknown for them. This can be challenging to students, but it is also a wonderful opportunity for them to learn to persevere in solving problems — an essential skill in everyday life. Mention to them that mistakes are not bad because that is when you truly learn. Explain to them that your brain literally grows when you think about and analyze a mistake you made. In the same vein, make sure you as the teacher or parent do not put mistakes down in any manner, but treat them as something valuable.
- The lesson *Patterns* gives students opportunities to look for structure and patterns, which are foundational activities in mathematics.

Pacing Suggestion for Chapter 1

This table does not include the chapter test as it is found in a different book (or file). Please add one day to the pacing for the test if you use it.

| The Lessons in Chapter 1 | page | span | suggested pacing | your pacing |
|--|------|---------|------------------|-------------|
| Addition Facts Review (optional) | 16 | 3 pages | 1 day | |
| Mental Addition | 19 | 2 pages | 1 day | |
| Review: Subtraction Facts (optional) | 21 | 2 pages | 1 day | |
| Subtraction Strategies, Part 1 | 23 | 2 pages | 1 day | |
| Subtraction Strategies, Part 2 | 25 | 2 pages | 1 day | |
| The Concept of Difference | 27 | 3 pages | 1 day | |
| Mental Math with Three-Digit Numbers | 30 | 2 pages | 1 day | |

| | | | |
|--|----|---------|-------|
| A Letter for the Unknown 1 | 32 | 2 pages | 1 day |
| The Connection with Addition and Subtraction | 34 | 2 pages | 1 day |
| A Letter for the Unknown 2 | 36 | 2 pages | 1 day |
| Patterns | 38 | 2 pages | 1 day |
| Review Chapter 1 | 40 | 2 pages | 1 day |
| Chapter 1 Test (optional) | | | |

| | | |
|-----------------------|-------------------|-----------|
| TOTALS | <i>21 pages</i> | 10 days |
| with optional content | <i>(26 pages)</i> | (12 days) |

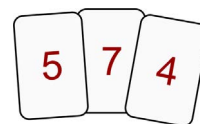
Games and Activities

The Lowest Sum

You need: Number cards with numbers from 2 to 9, preferably at least four copies of each card. A standard deck of cards from which all the aces, face cards and jokers have been removed is one possibility.

Game play: Shuffle the cards. In each round, deal three cards to each player. Each player will then form one TWO-digit number and one SINGLE-digit number using the three cards, and will calculate the sum of those mentally. The goal is to make this sum to be as small as possible.

For example, let's say you get the cards 5, 7 and 4. You could make these sums: $57 + 4$, $45 + 7$, $47 + 5$ and a few others. But choose the smallest sum!



Each player will say their sum aloud. The person with the smallest sum will win all the cards (from all players) used in that round, and puts them into their personal pile.

Continue with the next round by dealing another three cards to each player.

Once you cannot deal three cards to each player, the game is over. The person with MOST cards in their personal pile is the winner.

Variations

1. On each round, each player is allowed to discard ONE of their cards and to draw a new one to replace it, from the deck.
2. Players try to make the largest sum possible, instead of the smallest.
3. Use four cards, and make two 2-digit numbers.
4. Use four cards, and make one 3-digit and one single-digit number.
5. Use five cards, and make one 3-digit and one 2-digit number.
6. Write down each sum of each round, and add those together, to get a final score for each player. The player with the smallest final sum wins.

7 Up Card Game

You will see seven cards dealt face up. Choose any two cards that make 10 (or your chosen sum) to discard. When there are no cards that make that sum, click the deck to deal more cards. For this chapter, I suggest using sums of 11, 12, 13 and 14.

<https://www.mathmammoth.com/practice/seven-up>

Mathy's Berry Picking Adventure

Join Mathy, our mammoth mascot, on his adventure, and practise three-digit mental addition and subtraction!

<https://www.mathmammoth.com/practice/mathy-berries#mode=td-plus-mult-100,td-minus-mult-100,mult-100-minus-td-mult-10,mult-100-minus-td&duration=2m>

Choose other options: <https://www.mathmammoth.com/practice/mathy-berries>

Bingo

Click on the right answer in the grid, and it will be coloured green. Once you get five in a row, a column, or diagonally, BINGO, you win! For this chapter, choose from any of the addition and subtraction options.

<https://www.mathmammoth.com/practice/bingo>

Make Number Sentences

You're given numbers (in flowers), and an answer to a math sentence. Drag two flowers to the empty slots so that the math sentence is true. For this chapter, use a variety of number ranges to practise single-digit, double-digit and triple-digit additions and subtractions.

<https://www.mathmammoth.com/practice/number-sentences>

Fruity Math

Click the fruit with the correct answer and try to get as many points as you can within two minutes. This game covers addition and subtraction, advancing from single-digit to three-digit. You can also use the manual mode to set it up for specific kinds of additions or subtractions.

<https://www.mathmammoth.com/practice/fruity-math>

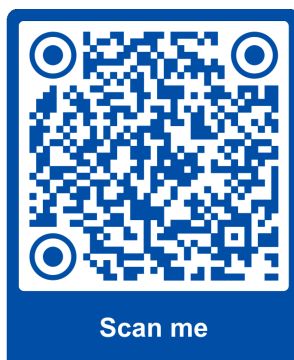
Helpful Resources on the Internet

We have compiled a list of Internet resources that match the topics in this chapter, including pages that offer:

- **online practice** for concepts;
- online **games**, or occasionally, printable games;
- **animations** and interactive **illustrations** of math concepts;
- **articles** that teach a math concept.

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

<https://l.mathmammoth.com/2024/gr3ch1>



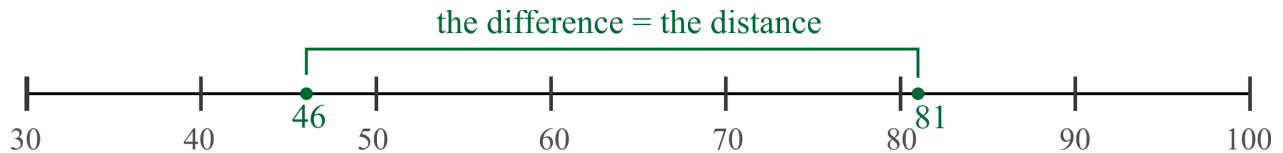
Sample worksheet from
<https://www.mathmammoth.com>

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The Concept of Difference

The *difference* between two numbers means how far apart they are from each other.

Example 1. What is the difference between 81 and 46?



The answer to the missing-number addition $46 + \underline{\quad} = 81$ will tell us the difference between 46 and 81.

From the number line, we can see that from 46 to 50 is **4 units**, from 50 to 80 is **30 units**, and from 80 to 81 is **one unit**. In total, the distance is **35 units**.

This is also the answer to the **subtraction** $81 - 46$.

The difference between two numbers can be found by subtraction.

Example 2. $558 - 556 = ??$

The answer to any subtraction problem is the difference between the numbers.

How far apart are 556 and 558 from each other? Only two units apart.

In other words, think how much to add to 556 to get to 558: $556 + \underline{\quad} = 558$.

1. Find the **differences**. Think how far apart the numbers are.

a. $78 - 75 = \underline{\quad}$

b. $112 - 108 = \underline{\quad}$

c. $505 - 499 = \underline{\quad}$

$61 - 58 = \underline{\quad}$

$692 - 688 = \underline{\quad}$

$1000 - 994 = \underline{\quad}$

2. Below each addition, write a matching subtraction problem so that the numbers in the boxes are the same.

a. $199 + \boxed{\quad} = 214$

b. $67 + \boxed{\quad} = 100$

$\underline{\quad} - \underline{\quad} = \boxed{\quad}$

$\underline{\quad} - \underline{\quad} = \boxed{\quad}$

Even if the two numbers are not close to each other, you can still “add backwards” to find their difference. Simply start at the smaller number, and **add up** until you get to the bigger number.

Example 3. $84 - 37 = ?$

We start at 37, and add until we reach 84.
See the sums on the right.

We add 3, 40 and 4, or a total of 47.
So, $84 - 37 = 47$.

$$37 + \underline{3} = 40$$

$$40 + \underline{40} = 80$$

$$80 + \underline{4} = 84$$

3. Add up to find the difference between two numbers.

a. $92 - 35 = \underline{\hspace{2cm}}$

$$35 + \underline{\hspace{1cm}} = 40$$

$$40 + \underline{\hspace{1cm}} = 90$$

$$90 + \underline{\hspace{1cm}} = 92$$

b. $805 - 299 = \underline{\hspace{2cm}}$

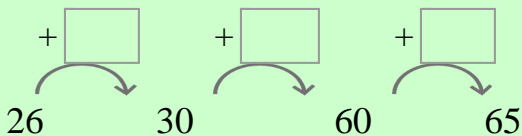
$$299 + \underline{\hspace{1cm}} = 300$$

$$300 + \underline{\hspace{1cm}} = 800$$

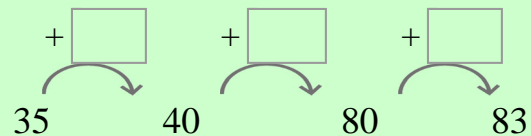
$$800 + \underline{\hspace{1cm}} = 805$$

4. Add up to find the differences, or use some other strategy.

a. $65 - 26 = \underline{\hspace{2cm}}$



b. $83 - 35 = \underline{\hspace{2cm}}$



c.

$$56 - 28 = \underline{\hspace{2cm}}$$

$$55 - 24 = \underline{\hspace{2cm}}$$

d.

$$72 - 18 = \underline{\hspace{2cm}}$$

$$82 - 46 = \underline{\hspace{2cm}}$$

e.

$$54 - 37 = \underline{\hspace{2cm}}$$

$$91 - 57 = \underline{\hspace{2cm}}$$

f.

$$74 - 55 = \underline{\hspace{2cm}}$$

$$63 - 34 = \underline{\hspace{2cm}}$$

5. Solve.

a. The temperature outside is 25 degrees Fahrenheit, and inside it is 74 degrees. What is the difference in temperature?

b. Ellie has \$91. She wants to buy a printer that costs \$129. How much more does she need to buy it?

6. What numbers do the animals represent in the problems? Write the answers in the table below, and then use the key to uncover the message.

Key: 0 1 2 3 4 5 6 7 8 9 10
O E I U D H N P R S T

| | | |
|----------------------------|-------------------------------|----------------------------|
| $362 - \text{bird} = 358$ | $389 - \text{elephant} = 384$ | $203 - \text{sheep} = 193$ |
| $120 - \text{camel} = 113$ | $361 - \text{chicken} = 353$ | $541 - \text{goat} = 539$ |
| $700 - \text{bison} = 699$ | $501 - \text{dog} = 501$ | $603 - \text{fish} = 594$ |
| $642 - \text{hippo} = 639$ | $203 - \text{dinosaur} = 197$ | |



How do you put a _____ into a refrigerator?

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| Animal | | | | | | | | | | | | | | |
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Mental Math with Three-Digit Numbers

Use your knowledge of place value to perform simple calculations.

Example 1. What is $538 + 4$?

- Ignore the 500, and solve $38 + 4$ first.
- $38 + 4$ is 42.
- Since 42 is not more than 100, $538 + 4$ is 542 (there is no change for the hundreds).

Example 2. What is $581 - 40$?

- Notice: 40 is four tens.
- 581 has eight tens.
- We subtract the tens: $80 - 40 = 40$.
- So, $581 - 40 = 541$.

1. Add and subtract. Compare the problems.

| | | |
|--|--|--|
| a. $45 + 6 =$ _____ $145 + 6 =$ _____ | b. $77 - 3 =$ _____ $677 - 3 =$ _____ | c. $15 + 8 =$ _____ $315 + 8 =$ _____ |
|--|--|--|

2. Add and subtract.

| | | |
|---|---|---|
| a. $235 + 4 =$ _____ $477 + 7 =$ _____ | b. $671 - 9 =$ _____ $527 - 5 =$ _____ | c. $983 - 8 =$ _____ $293 + 7 =$ _____ |
|---|---|---|

3. Play **The Lowest Sum** game, Variation 4. (See the chapter introduction.)

4. Add and subtract multiples of ten and multiples of 100.

| | | |
|---|---|---|
| a. $289 - 30 =$ _____ $289 - 200 =$ _____ $289 - 50 =$ _____ | b. $778 - 20 =$ _____ $778 - 40 =$ _____ $778 - 400 =$ _____ | c. $604 - 300 =$ _____ $604 - 10 =$ _____ $604 - 30 =$ _____ |
| d. $635 + 40 =$ _____ $460 + 40 =$ _____ | e. $650 + 30 =$ _____ $808 + 80 =$ _____ | f. $983 - 60 =$ _____ $291 - 90 =$ _____ |

To solve $595 + 6$, compare it with $95 + 6$ (without the five hundreds).

- $95 + 6$ goes over one hundred, by one. It is 101.
- So, $595 + 6$ *also* goes over the *next* hundred, by 1, and equals 601.

5. Continue the patterns.

$196 + 2 = \underline{\hspace{2cm}}$
 $196 + 3 = \underline{\hspace{2cm}}$
 $196 + 4 = \underline{\hspace{2cm}}$
 $196 + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$
 $196 + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$
 $196 + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$

$293 + 5 = \underline{\hspace{2cm}}$
 $293 + 6 = \underline{\hspace{2cm}}$
 $293 + 7 = \underline{\hspace{2cm}}$
 $293 + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$
 $293 + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$
 $293 + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$

6. Add. Watch to see if the sum goes over to the next hundred.

a. $393 + 8 = \underline{\hspace{2cm}}$
 $498 + 5 = \underline{\hspace{2cm}}$
 $292 + 6 = \underline{\hspace{2cm}}$

b. $797 + 6 = \underline{\hspace{2cm}}$
 $993 + 7 = \underline{\hspace{2cm}}$
 $595 + 8 = \underline{\hspace{2cm}}$

c. $294 + 6 = \underline{\hspace{2cm}}$
 $497 + 7 = \underline{\hspace{2cm}}$
 $291 + 6 = \underline{\hspace{2cm}}$

7. What numbers do the animals represent in the problems? Write the answers in the table below, and then use the key to uncover the message.

Key: 2 3 4 5 6 7 8 9
 D E Y W I U O L

$763 +$  $= 770$

$359 +$  $= 361$

$637 +$  $= 642$

$348 +$  $= 352$

$569 +$  $= 571$




$498 +$  $= 501$

$225 +$  $= 233$

$384 +$  $= 390$

$194 +$  $= 203$

Animal   

Number

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A Letter for the Unknown 1

Example 1. Debbie spent \$10 on a gift. Now she has \$22 left. How much money did she have at first?

We will use **a letter to signify the unknown number**, or what the problem asks for.

Let M be Debbie's money at first. Then:

$$M - \$10 = \$22$$

Solution: $M = \$32$. She had \$32 at first.

Example 2. A wooden chair costs \$59 and a metal one \$28. How much *more* does the first one cost?

Let x be what the question is asking: the *difference* between the prices. A difference can be found by subtracting:

$$x = \$59 - \$28$$

Solution: $x = \$31$. It costs \$31 more.

These number sentences are **equations**, because they contain an **equals sign**, and something on both sides of it.

1. Match the correct equation(s) with each problem. Find also the value of the unknown.

a. Emily is 129 cm tall and Anna is 7 cm taller than her. How tall is Anna? (A signifies Anna's height.)

A = _____

$129 + 7 = A$

$129 + A = 7$

$7 + A = 129$

$129 - A = 7$

b. Jack is 132 cm tall now. He has grown 5 cm in three months. How tall was he three months ago? (J signifies Jack's height.)

J = _____

$132 + 5 = J$

$J + 5 = 132$

$132 - 5 = J$

$J - 5 = 132$

2. For each problem, write an **equation with x** . Find also the value of x .

a. Ann needs 56 pins for a sewing project. She only has 41. How many more does she need?

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

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

b. You are on page 62 of a book that has 96 pages. How many pages are left to read?

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

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

Example 3. A package of 100 buttons has 40 white, 25 blue, and some red buttons. How many are red?

Let's use R for our unknown, for the number of Red buttons.

We can write **an addition equation:** $25 + 40 + R = 100$.

We could also write a subtraction equation: $100 - 40 - 25 = R$. Both are correct.

Find the value of R. $R = \underline{\hspace{2cm}}$

3. Write an equation for each problem. Use a letter of your choosing for the unknown.

a. A bag of candy has 50 candies. Of them, 13 are strawberry, 18 lemon and the rest are cherry. How many are cherry?

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

$$\underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

b. May found 14 socks in one drawer, 21 in another and five under her bed. How many socks did she find in total?

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

$$\underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

c. Mom bought some bushes and planted eight of them. Now she has 17 left. How many bushes did she buy?

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

$$\underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

d. Amy has 61 crayons. Of them, 17 are broken and the rest are not. How many are in good shape?

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

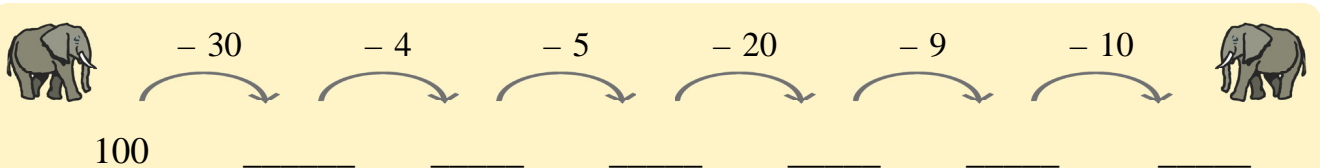
$$\underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

e. Emma has \$27 in her purse and \$4 in her piggy bank. She wants to buy shoes for \$45. How much more money does she need?

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

$$\underline{\hspace{1cm}} = \underline{\hspace{1cm}}$$

4. A mental math workout!



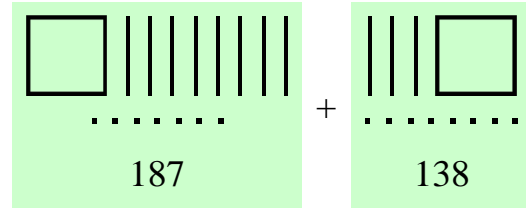
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Regrouping in Addition

Remember regrouping?

Ten ones (the dots) make a new ten. Ten tens (the sticks) make a new hundred. *Circle them!*

What is the total now?



| hundreds | tens | ones |
|----------|------|------|
| 1 | 1 | |
| 1 | 8 | 7 |
| + | 1 | 3 |
| | | |
| 3 | 2 | 5 |

In the ones' column, we add: $7 + 8 = 15$. We *regroup* these 15 ones as 1 ten 5 ones. We move the one ten to the tens column by writing "1" there, above the other numbers.

The tens: $1 + 8 + 3 = 12$. Ten of these 12 tens make a hundred. In other words, we regroup the 12 tens as 1 hundred 2 tens. We move the hundred to the hundreds' column by writing "1" there.

1. Write the numbers in the grid, and add. Regroup. You can circle 10 ten-sticks AND 10 ones in the picture to help you. Or, you can do these exercises using base-ten blocks.

a. +

85 + 146

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b. +

259 + 162

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c. +

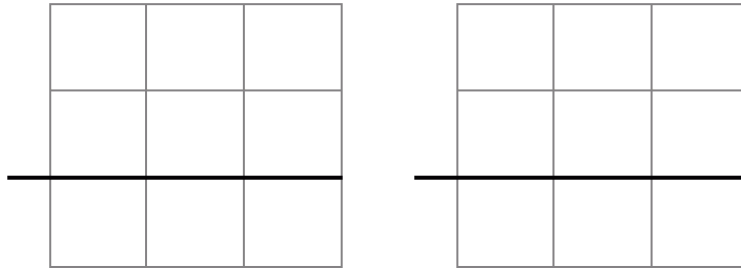
157 + 375

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5. Solve. Write an equation or equations for each, to show your calculations.

- a. One computer costs \$365 and another costs \$78 more than that. How much do *two* of the more expensive computers cost?

Equation(s): _____

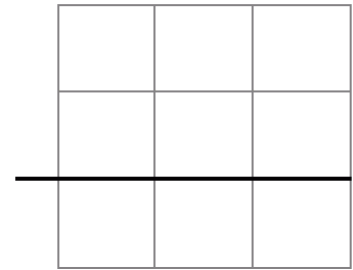


- b. Candles are packaged in boxes of 300. Mary has three boxes. She took 12 candles out of one of the boxes. How many candles are there in boxes now?

Equation(s): _____

- c. The Hudson family is driving to a zoo that is 285 km away. They have driven 125 km so far. How far do they still have to drive?

Equation(s): _____



Puzzle Corner

Find single-digit numbers in place of the shapes so that the additions are true. Note that the same symbol means the same number in both places.

$$\begin{array}{r} 3 \quad \bigcirc \quad \square \\ + 1 \quad 9 \quad \bigcirc \\ \hline 5 \quad 1 \quad 0 \end{array}$$

$$\begin{array}{r} 2 \quad \square \quad \triangle \\ + \triangle \quad 4 \quad 5 \\ \hline 9 \quad 3 \quad 1 \end{array}$$

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Addition, Subtraction and Parentheses

Addition is an operation, subtraction is another operation and multiplication is another. If you have more than one operation, there are rules that tell you which one to do first.

First do what is inside the parentheses (). Think of the parentheses as a “bubble” or a “balloon”—it makes it more fun!

$$15 - (2 + 3)$$

$$15 - 5 = 10$$

$$(6 + 7) - (4 - 3)$$

$$13 - 1 = 12$$

If there are no parentheses, then add and subtract from the left to right. To help you, you can draw a bubble or a balloon around the calculation to be done first.

$$80 + 20 - 30$$

$$100 - 30 = 70$$

$$90 - 60 - 20 + 4$$

$$30 - 20 + 4$$

$$10 + 4 = 14$$

1. Calculate. Compare the problems. You can draw balloons or bubbles!

| a. | b. | c. |
|------------------------------------|------------------------------------|------------------------------------|
| $20 - 6 - 2 = \underline{\quad}$ | $20 + (6 + 2) = \underline{\quad}$ | $20 - 6 + 2 = \underline{\quad}$ |
| $20 - (6 - 2) = \underline{\quad}$ | $(20 + 6) + 2 = \underline{\quad}$ | $20 - (6 + 2) = \underline{\quad}$ |

2. Write a single number sentence to match each written sentence. Then solve.

a. “First add 40 and 50, then subtract that sum from 120.”

b. “First add 70 and 50, then subtract 90 from that sum.”

c. “First subtract 10 and 5. Then subtract that result from 50.”

3. Mary and Jess both calculated $20 - 6 + 2$. Mary got 12 and Jess got 16. Explain how they got their results, and who is correct.

4. Calculate and compare the two problems in each box.

$$\text{a. } (13 - 6) - (2 + 5) =$$

$$13 - 6 - 2 + 5 =$$

$$\text{b. } (200 - 40) - (90 - 70) =$$

$$200 - 40 - 90 - 70 =$$

5. Add parentheses to this math problem in different places and check how many different answers you can get.

$$100 - 50 + 20 - 10$$

$$100 - 50 + 20 - 10$$

$$100 - 50 + 20 - 10$$

$$100 - 50 + 20 - 10$$

6. Henry calculated $25 - 10 - 4 + 6$. This is his explanation, “I subtracted $25 - 10$, which is 15, and then from that I subtracted ten, so I get 5.”

Did he get it correct? What would you say to Henry?

7. Solve.

$$\text{a. } 505 - 317 + 195 = \underline{\hspace{2cm}}$$

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$$\text{b. } 364 + (409 - 238) = \underline{\hspace{2cm}}$$

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8. Add parentheses to each equation to make it true.

$$\text{a. } 10 - 5 - 2 = 7$$

$$\text{b. } 20 - 5 - 2 - 1 = 16$$

$$\text{c. } 15 - 5 + 2 - 1 = 9$$

$$\text{d. } 10 - 5 + 2 = 3$$

$$\text{e. } 20 - 5 - 2 - 1 = 18$$

$$\text{f. } 15 - 5 + 2 - 1 = 7$$

Word Problems Practice

Example. Elizabeth bought a guitar for \$129 and strings for \$28. She paid with \$200. What was her change?

We will write an equation for this. Let's first choose a letter for our unknown. The unknown is her change, so C is fitting. Change can be calculated by subtracting the total of the items from the money given. The total is calculated as $\$129 + \28 , and that whole thing is subtracted from $\$200$. So, an equation could be:

$$C = 200 - (129 + 28)$$

Other possible equations are $C = 200 - 129 - 28$ and $129 + 28 + C = 200$.

Now let's use mental math and rounded numbers to estimate what the answer will be. Her total will be about $\$130 + \$30 = \$160$. Her change will therefore be about $\$40$.

To calculate exactly, we could add and subtract in columns (you can do so!) or use mental math. The final solution is: $C = \$43$. Her change was $\$43$. This is close to our estimate, so it is reasonable.

For each problem in this lesson:

- Write an equation that has a letter for the unknown for each problem. If that is challenging, you can first write separate equations.
- Check that your final answer is reasonable by using estimation.
- If you add in columns, check your work by adding in different order. If you subtract in columns, check your work by adding.

1. A laptop costs \$519. Dad had a coupon to get a \$30 discount, and then he also got another, \$17 discount. What was the final price?

Equation:

Estimate:

Solution:

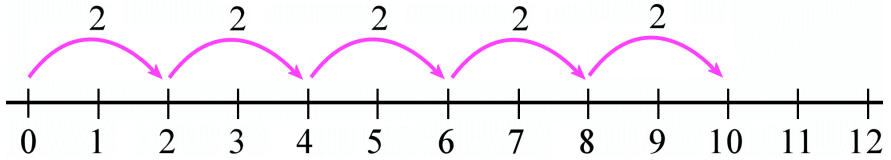
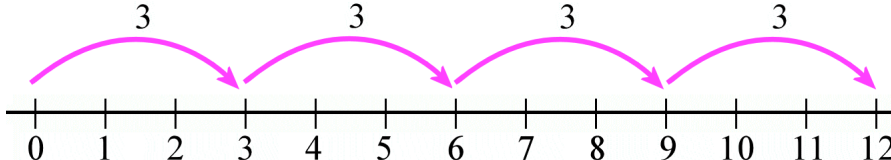
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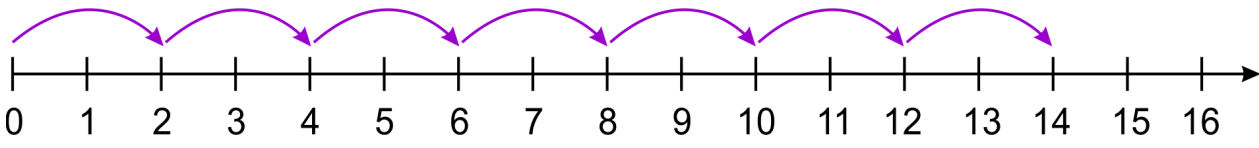
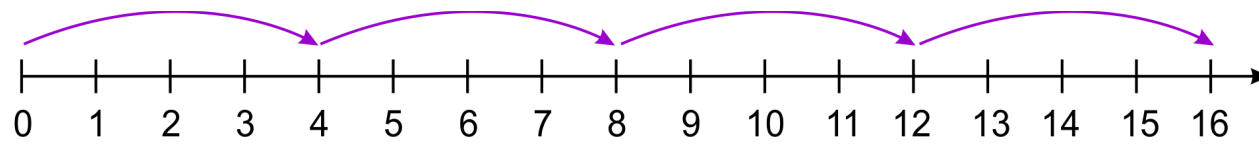
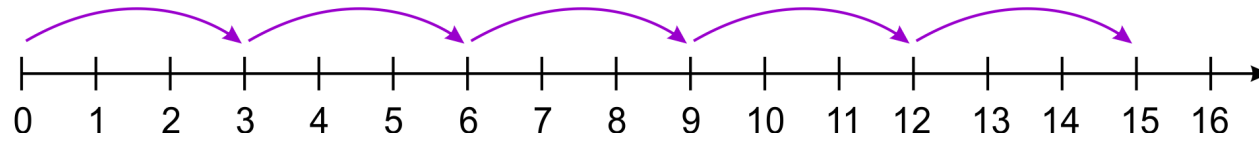
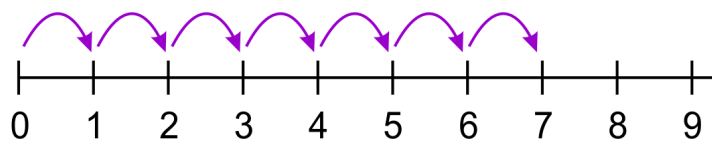
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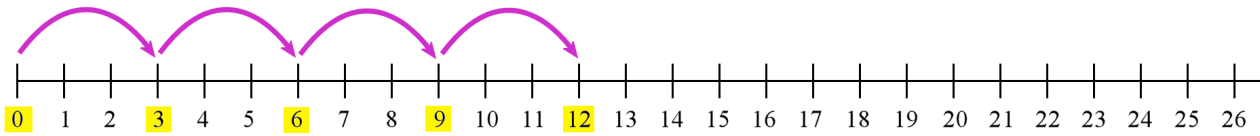
Multiplying on a Number Line

| | |
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| <p>Five jumps, each jump is two steps.</p> <p>$5 \times 2 = 10$</p> |  |
| <p>Four jumps, each jump is three steps.</p> <p>$4 \times 3 = 12$</p> |  |

1. Write the multiplication sentence that is illustrated by the jumps on the number line.

| | |
|---|--|
|  <p>a. _____ \times _____ = _____</p> <p>how many jumps length of each jump</p> | |
|  <p>b. _____ \times _____ = _____</p> | |
|  <p>c. _____ \times _____ = _____</p> | |
| <p>d. _____ \times _____ = _____</p> |  |

2. Draw more “skips” of three.



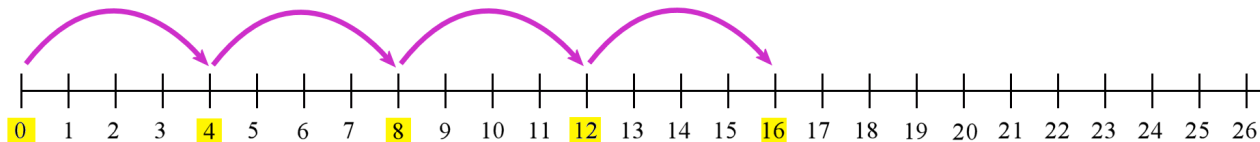
3. Multiply with 3. Use the skips above to help.

| | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| a. $5 \times 3 = \underline{\quad}$ | b. $8 \times 3 = \underline{\quad}$ | c. $6 \times 3 = \underline{\quad}$ | d. $2 \times 3 = \underline{\quad}$ |
| $4 \times 3 = \underline{\quad}$ | $7 \times 3 = \underline{\quad}$ | $3 \times 3 = \underline{\quad}$ | $9 \times 3 = \underline{\quad}$ |

4. How many skips of three are needed? Use the number line above to help.

| | | | |
|--------------------------------------|--------------------------------------|--------------------------------------|-------------------------------------|
| a. $\underline{\quad} \times 3 = 24$ | b. $\underline{\quad} \times 3 = 18$ | c. $\underline{\quad} \times 3 = 21$ | d. $\underline{\quad} \times 3 = 6$ |
| $\underline{\quad} \times 3 = 9$ | $\underline{\quad} \times 3 = 15$ | $\underline{\quad} \times 3 = 12$ | $\underline{\quad} \times 3 = 3$ |

5. Draw more “skips” of four.



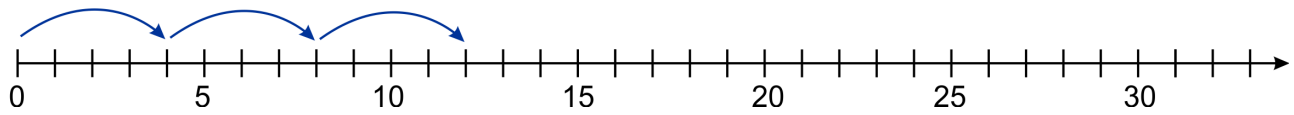
6. Multiply with 4. Use the skips above to help.

| | | | |
|-------------------------------------|-------------------------------------|-------------------------------------|-------------------------------------|
| a. $2 \times 4 = \underline{\quad}$ | b. $6 \times 4 = \underline{\quad}$ | c. $8 \times 4 = \underline{\quad}$ | d. $5 \times 4 = \underline{\quad}$ |
| $4 \times 4 = \underline{\quad}$ | $7 \times 4 = \underline{\quad}$ | $3 \times 4 = \underline{\quad}$ | $1 \times 4 = \underline{\quad}$ |

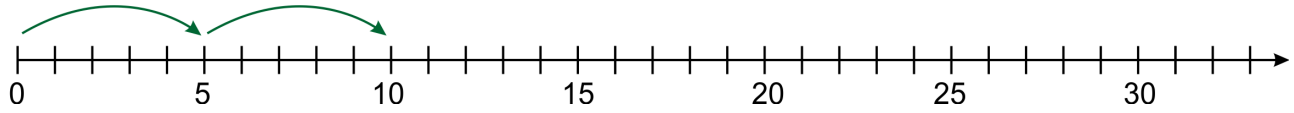
7. How many skips of four are needed? Use the number line above to help.

| | | | |
|--------------------------------------|-------------------------------------|--------------------------------------|--------------------------------------|
| a. $\underline{\quad} \times 4 = 24$ | b. $\underline{\quad} \times 4 = 0$ | c. $\underline{\quad} \times 4 = 16$ | d. $\underline{\quad} \times 4 = 20$ |
| $\underline{\quad} \times 4 = 8$ | $\underline{\quad} \times 4 = 12$ | $\underline{\quad} \times 4 = 8$ | $\underline{\quad} \times 4 = 4$ |

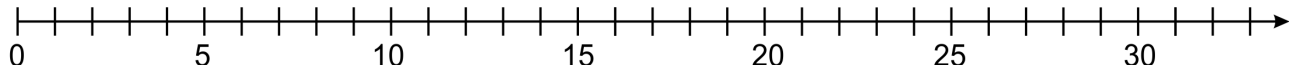
8. Continue to draw jumps to fit the multiplication problem.



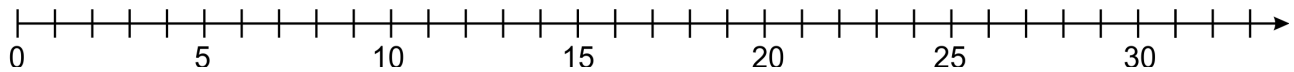
a. $6 \times 4 =$ _____



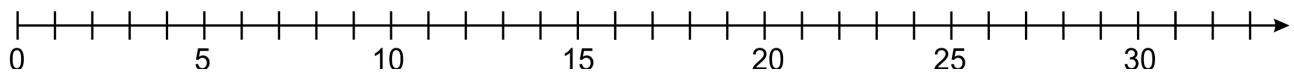
b. $5 \times 5 =$ _____



c. $6 \times 5 =$ _____

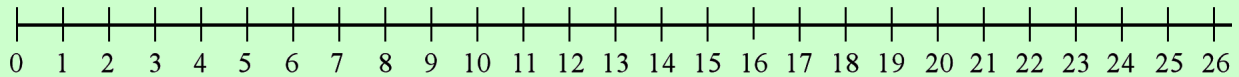


d. $7 \times 4 =$ _____



e. $3 \times 10 =$ _____

9. Add repeatedly (or skip-count) to multiply. You can use the number line to help.



a.

$3 \times 2 =$ _____

$6 \times 3 =$ _____

$4 \times 5 =$ _____

b.

$5 \times 2 =$ _____

$7 \times 4 =$ _____

$3 \times 8 =$ _____

c.

$5 \times 6 =$ _____

$3 \times 9 =$ _____

$4 \times 10 =$ _____

d.

$3 \times 10 =$ _____

$2 \times 11 =$ _____

$3 \times 7 =$ _____

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Order of Operations 1

Mathematicians have decided in which order we calculate if there are many operations:

1. First, we calculate what is inside the **PARENTHESES** ().
2. Then, we **MULTIPLY** before adding or subtracting.
3. Lastly, we **ADD** and **SUBTRACT** from left to right.

Example 1. Here, the multiplication is done before subtraction:

$$45 - 3 \times 4$$

$$= 45 - 12$$

$$= 33$$

Example 2. Both multiplications are done before adding:

$$5 \times 2 + 2 \times 10$$

$$= 10 + 20$$

$$= 30$$

*In this lesson, we will not have any parentheses in the problems.
We will focus on addition, subtraction and multiplication.*

1. Add and subtract from left to right. This means the first operation you do is the first one from the left. You can circle the operation to do **FIRST** in a “bubble” or a “balloon”!

| | | |
|-----------------|-----------------|-------------------------|
| a. $15 + 7 - 3$ | b. $15 - 7 + 3$ | c. $100 - 40 - 40 + 20$ |
|-----------------|-----------------|-------------------------|

2. Calculate. Circle the operation to be done first. Remember to multiply first!

| | | |
|---|------------------------------|------------------------------|
| a. $5 + 4 \times 2$ $5 + 8 = \underline{\hspace{2cm}}$ | b. $10 + 5 \times 4$ | c. $20 - 4 \times 4$ |
| d. $2 \times 6 + 2 \times 7$ | e. $3 \times 5 - 2 \times 4$ | f. $2 \times 5 + 1 \times 4$ |
| g. $5 + 1 \times 2 + 5$ | h. $30 - 2 \times 2 - 10$ | i. $50 - 3 \times 2 + 6$ |

Zero and One in Multiplication

Multiplication means you have so many equal-sized groups. Let's see how that idea works when we either have zero groups, or each group has zero things.



Four groups, each has zero giraffes.

$$4 \times 0 = 0 + 0 + 0 + 0 = 0$$

How many groups how many in each group (empty groups)

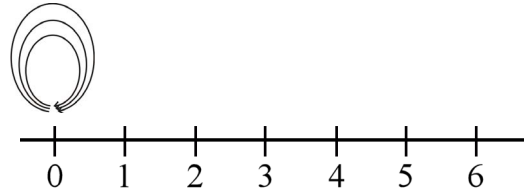
Zero groups (or NO groups) of four giraffes.

$$0 \times 4 = 0$$

How many groups How many in each group (nothing)

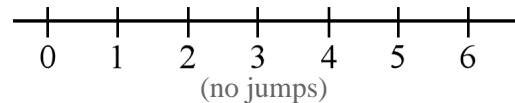
Take three jumps of zero steps.
Where do you end up?

$$3 \times 0 = 0$$



Take ZERO or no jumps of three steps:

$$0 \times 3 = 0$$



Multiplying by **one** is easy!



Four groups, each has one giraffe.

$$4 \times 1 = 1 + 1 + 1 + 1 = \underline{\quad}$$



One group has four giraffes.

$$1 \times 4 = \underline{\quad}$$

1. Let's see if you understood! Multiply.

a. $0 \times 5 = \underline{\quad}$

b. $1 \times 1 = \underline{\quad}$

c. $0 \times 10 = \underline{\quad}$

d. $6 \times 1 = \underline{\quad}$

$0 \times 0 = \underline{\quad}$

$1 \times 9 = \underline{\quad}$

$1 \times 10 = \underline{\quad}$

$6 \times 0 = \underline{\quad}$

2. Fill in the easy multiplication tables of zero and one.

| <u>Table of Zero</u> | |
|----------------------------------|-----------------------------------|
| $1 \times 0 = \underline{\quad}$ | $7 \times 0 = \underline{\quad}$ |
| $2 \times 0 = \underline{\quad}$ | $8 \times 0 = \underline{\quad}$ |
| $3 \times 0 = \underline{\quad}$ | $9 \times 0 = \underline{\quad}$ |
| $4 \times 0 = \underline{\quad}$ | $10 \times 0 = \underline{\quad}$ |
| $5 \times 0 = \underline{\quad}$ | $11 \times 0 = \underline{\quad}$ |
| $6 \times 0 = \underline{\quad}$ | $12 \times 0 = \underline{\quad}$ |

| <u>Table of One</u> | |
|----------------------------------|-----------------------------------|
| $1 \times 1 = \underline{\quad}$ | $7 \times 1 = \underline{\quad}$ |
| $2 \times 1 = \underline{\quad}$ | $8 \times 1 = \underline{\quad}$ |
| $3 \times 1 = \underline{\quad}$ | $9 \times 1 = \underline{\quad}$ |
| $4 \times 1 = \underline{\quad}$ | $10 \times 1 = \underline{\quad}$ |
| $5 \times 1 = \underline{\quad}$ | $11 \times 1 = \underline{\quad}$ |
| $6 \times 1 = \underline{\quad}$ | $12 \times 1 = \underline{\quad}$ |

3. Solve.

a. Mommy bought four cartons of eggs. Each carton had six eggs, but two of the eggs were bad. How many good eggs did Mommy get?

b. Mary has a jar of marbles, a jar of pretty stones and a jar of pine cones. Each jar has 20 things in it. How many things does Mary have in these jars?

4. Multiply.

a. $35 \times 1 = \underline{\quad}$

b. $1 \times 1 = \underline{\quad}$

c. $1 \times 67 = \underline{\quad}$

$3 \times 10 = \underline{\quad}$

$0 \times 9 = \underline{\quad}$

$0 \times 0 = \underline{\quad}$

5. Fill in the grid. For each empty box, look up and to the far left, and multiply those two numbers.

| \times | 0 | 1 | 2 | 3 | 4 |
|----------|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | 6 <small>2×3</small> | |
| 3 | | | | | |
| 4 | | | | | |

| \times | 0 | 1 | 2 | 3 | 4 |
|----------|---|---|---|---|---|
| 1 | | | | | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | | | | |

Understanding Word Problems, Part 2

Sometimes in a multiplication problem we are *not* asked the *total*. Instead, the problem may ask for how many groups, or how many in each group.

Example 1. If John separates his 10 toy figures into two equal groups, how many will be in each group?



We can write a multiplication where one of the numbers we multiply is missing.

$$2 \times \underline{\quad} = 10$$

how many
groups

how many in
each group

the total

There will be five figures in each group because $2 \times 5 = 10$.

Example 2. Emily bought a bunch of pillows for \$6 each. Her total bill was \$60. How many pillows did she buy?

$$\underline{\quad} \times \$6 = \$60$$

how many
pillows

cost of
one pillow

the total

The answer is 10 pillows because $10 \times 6 = 60$.

1. Solve. Write a multiplication for each problem. Do not just write the answer.

- a. The teacher divided 18 students into three equal groups. How many are in each group? (Hint: Draw the students.)

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

how many groups how many in each group the total

- b. Mary bought some notebooks for \$2 each. The total cost was \$18. How many did she buy?

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

how many notebooks how much each costs the total

- c. Matthew has saved \$20. He wants to buy balls that cost \$5 each. How many can he buy?

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

- d. Isabella bought five little toys that cost \$3 each. How much was the total cost?

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

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Multiplication Table of 11

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

0, 11, _____, _____, _____, _____, _____, _____, _____, _____, _____, 132

2. Fill in the missing numbers. Then cover what you wrote, and choose problems in random order and practise.

a.

| | |
|-----------------------------------|------------------------------------|
| $1 \times 11 = \underline{\quad}$ | $7 \times 11 = \underline{\quad}$ |
| $2 \times 11 = \underline{\quad}$ | $8 \times 11 = \underline{\quad}$ |
| $3 \times 11 = \underline{\quad}$ | $9 \times 11 = \underline{\quad}$ |
| $4 \times 11 = \underline{\quad}$ | $10 \times 11 = \underline{\quad}$ |
| $5 \times 11 = \underline{\quad}$ | $11 \times 11 = \underline{\quad}$ |
| $6 \times 11 = \underline{\quad}$ | $12 \times 11 = \underline{\quad}$ |

b.

| | |
|------------------------------------|-------------------------------------|
| $\underline{\quad} \times 11 = 11$ | $\underline{\quad} \times 11 = 77$ |
| $\underline{\quad} \times 11 = 22$ | $\underline{\quad} \times 11 = 88$ |
| $\underline{\quad} \times 11 = 33$ | $\underline{\quad} \times 11 = 99$ |
| $\underline{\quad} \times 11 = 44$ | $\underline{\quad} \times 11 = 110$ |
| $\underline{\quad} \times 11 = 55$ | $\underline{\quad} \times 11 = 121$ |
| $\underline{\quad} \times 11 = 66$ | $\underline{\quad} \times 11 = 132$ |

3. Don't write the answers here. Use these problems for random drill practice.

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

4. Don't write the answers here. Use these problems for random drill practice.

| | | | | |
|--------------------------------|--------------------------------|--------------------------------|--------------------------------|--------------------------------|
| $\blacksquare \times 11 = 88$ | $\blacksquare \times 11 = 77$ | $\blacksquare \times 11 = 55$ | $\blacksquare \times 11 = 66$ | $\blacksquare \times 11 = 11$ |
| $\blacksquare \times 11 = 132$ | $\blacksquare \times 11 = 121$ | $\blacksquare \times 11 = 33$ | $\blacksquare \times 11 = 22$ | $\blacksquare \times 11 = 44$ |
| $\blacksquare \times 11 = 110$ | $\blacksquare \times 11 = 99$ | $\blacksquare \times 11 = 132$ | $\blacksquare \times 11 = 121$ | $\blacksquare \times 11 = 110$ |

5. a. Continue the pattern.

$$8 \times 5 = \underline{\hspace{2cm}}$$

$$10 \times 5 = \underline{\hspace{2cm}}$$

$$12 \times 5 = \underline{\hspace{2cm}}$$

$$14 \times 5 = \underline{\hspace{2cm}}$$

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

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

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

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

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

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

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

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

b. The answers form an easy pattern. Why does the pattern work that way?

6. Figure out the missing numbers in the multiplication charts.

a.

| \times | | 3 | | 5 |
|----------|----|----|----|---|
| | 66 | 33 | | |
| | 42 | | | |
| 9 | 54 | | 36 | |
| | | 12 | | |

b.

| \times | | 5 | 6 | 9 |
|----------|----|----|----|----|
| | | 10 | 12 | |
| 5 | 20 | | | |
| | | 50 | | 90 |
| 4 | 16 | | | |

7. Write different multiplication problems for these answers. You can also use 1!

a.

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = 20$$

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = 20$$

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = 20$$

b.

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = 18$$

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = 18$$

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = 18$$

c.

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = 36$$

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = 36$$

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = 36$$

8. Fill in the parts of the multiplication chart that we have studied.

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

- a. I am in the table of four but not in the table of three.
If you add two to me, the new number is in the table of ten, in the table of five and in the table of six.

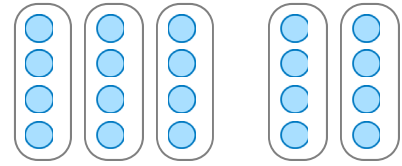
Mystery Number
38 2 2 1 99
47 101

- b. I am in the table of 11! If you take one away from me, you will get a number that is in the table of 10.

- c. I am in the table of five but not in the table of ten.
Adding my digits, you get seven.

Partial Products

Look at the two-part array on the right. The first array has 3 columns, 4 dots in each. The second one has 2 columns, 4 dots in each.



This illustrates to us $3 \times 4 + 2 \times 4$.

We could also “push” these arrays together and get one larger one, which would illustrate 5×4 .

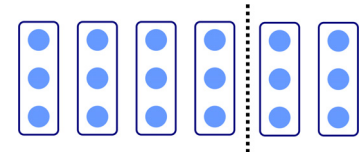
We can see that $3 \times 4 + 2 \times 4$ equals 5×4 .

Think of it this way, using apples instead of dots. **Three** groups of 4 apples, plus **two** groups of 4 apples equals **five** groups of 4 apples. It makes sense, right?

1. a. Fill in.

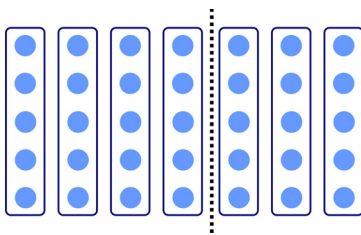
_____ groups of 3 plus _____ groups of 3

= _____ groups of 3

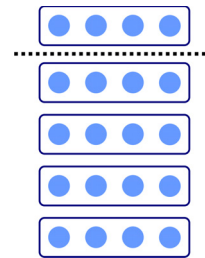


b. Now write the above using numbers and symbols for operations.

2. Fill in.



a. _____ \times _____ + _____ \times _____
= _____ \times _____



b. _____ \times _____ + _____ \times _____
= _____ \times _____

c. Draw dots in groups to illustrate $3 \times 7 + 2 \times 7$.

What single multiplication is equal to that?

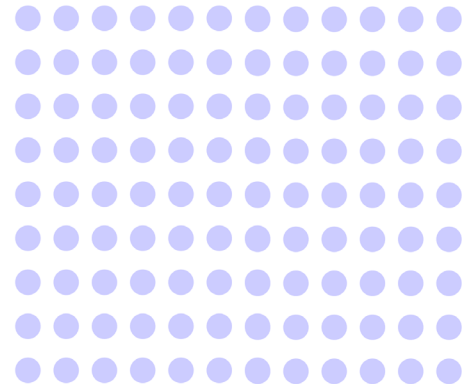
The mathematical term for this idea of breaking down a multiplication into parts is **partial products**. Don't worry about the name though. The important part is to learn to use it. :)

Example 1. 9×12 could be calculated as three groups of 12 and six groups of 12.

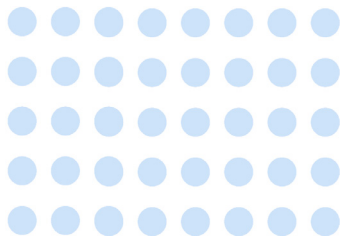
What do you get, solving it that way?

But, we can also turn it around, think of it as 12×9 , and break it down into ten groups of 9 and two groups of 9.

What do you get now?

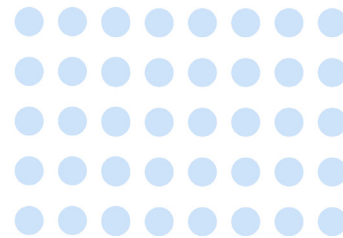


3. Divide the array of dots into two parts, according to the given expression. Fill in the missing parts. (Note that parts (a) and (b) have the same array, and so do (c) and (d).)



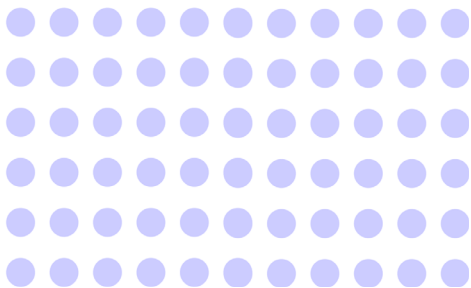
a. $5 \times 3 + 5 \times 5$

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



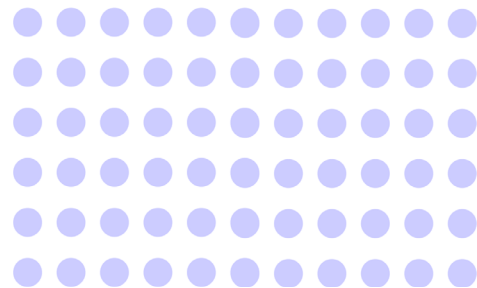
b. $1 \times 8 + 4 \times 8$

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



c. $6 \times 4 + 6 \times 7$

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



d. $2 \times 11 + 4 \times 11$

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

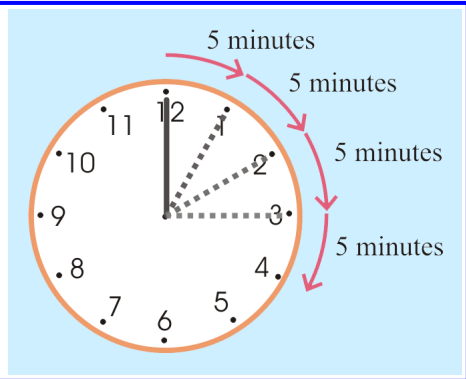
4. Write the number sentence $12 \times 7 + 12 \times 3$ as a single multiplication.

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Review: Reading the Clock

When the MINUTE hand travels from one number to the next on the clock face, 5 minutes of time passes.

Each interval is five minutes. That is why you skip-count by fives, when figuring out the minutes.



1. Write the time the clock shows. Then continue writing the times at each five-minute interval. You can use your practice clock to help.

a.



8 : 15

8 : 20

___ : ___

___ : ___

___ : ___

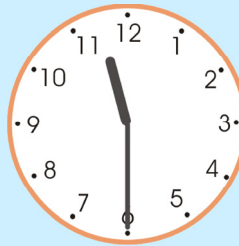
___ : ___

___ : ___

___ : ___

___ : ___

b.



___ : ___

___ : ___

___ : ___

___ : ___

___ : ___

___ : ___

___ : ___

___ : ___

___ : ___

c.



___ : ___

___ : ___

___ : ___

___ : ___

___ : ___

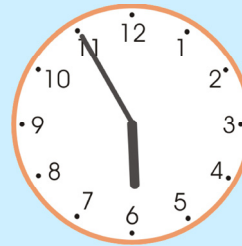
___ : ___

___ : ___

___ : ___

___ : ___

d.



___ : ___

___ : ___

___ : ___

___ : ___

___ : ___







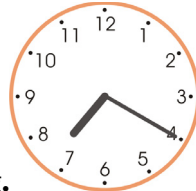
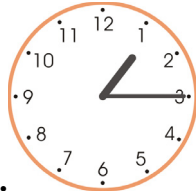
___ : ___

___ : ___





___ : ___

___ : ___




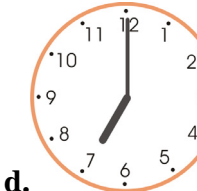
2. Write the time the clock shows.

| | | | |
|---|---|--|---|
|  <p>a.</p> <p>_____ : _____</p> |  <p>b.</p> <p>_____ : _____</p> |  <p>c.</p> <p>_____ : _____</p> |  <p>d.</p> <p>_____ : _____</p> |
|  <p>e.</p> <p>_____ : _____</p> |  <p>f.</p> <p>_____ : _____</p> |  <p>g.</p> <p>_____ : _____</p> |  <p>h.</p> <p>_____ : _____</p> |

3. Write the time the clock shows. Then write the time 10 minutes later than what the clock shows.

| | | | | |
|--|--|--|---|--|
| <p>The time now →</p> <p>10 min. later →</p> |  <p>a.</p> <p>_____ : _____</p> <p>_____ : _____</p> |  <p>b.</p> <p>_____ : _____</p> <p>_____ : _____</p> |  <p>c.</p> <p>_____ : _____</p> <p>_____ : _____</p> |  <p>d.</p> <p>_____ : _____</p> <p>_____ : _____</p> |
|--|--|--|---|--|

4. Write the time 5 minutes *earlier* than what the clock shows.

| | | | | |
|-------------------------|---|---|--|---|
| <p>5 min. earlier →</p> |  <p>a.</p> <p>_____ : _____</p> |  <p>b.</p> <p>_____ : _____</p> |  <p>c.</p> <p>_____ : _____</p> |  <p>d.</p> <p>_____ : _____</p> |
|-------------------------|---|---|--|---|

Half and Quarter Hours

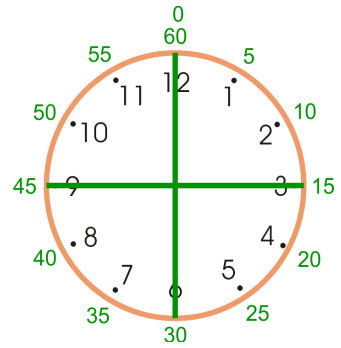
Imagine the clock face divided into four parts, or *quarters*. The word “quarter” means a fourth part.

Recall that one hour is 60 minutes. So then, each quarter of an hour is **15 minutes**.

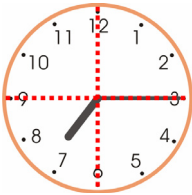
Since 15 minutes is a quarter of an hour, the time 6:15 can also be said as “**quarter after 6**” or “quarter past 6”.

Similarly, the time 5:45 can also be said as “**quarter till 6**”. It means a quarter of an hour, or 15 minutes, before 6 o’clock.

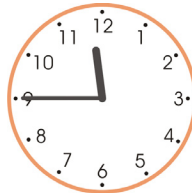
Remember also “half past.” For example, 6:30 is “half past 6”. It means a half-hour past or after 6 o’clock.



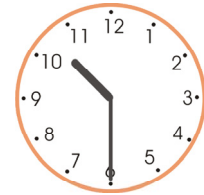
1 hour = 60 minutes
 1/2 hour = 30 minutes
 1/4 hour = 15 minutes



a quarter after 7



a quarter till 12

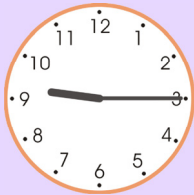


half past 10

1. Write the time in the standard way. Then match a clock with each given time.

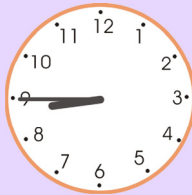
a. a quarter after 8

_____ : _____



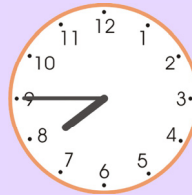
b. a quarter till 9

_____ : _____



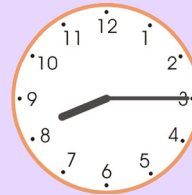
c. a quarter after 9

_____ : _____



d. a quarter till 8

_____ : _____



2. Fill in the missing words or numbers.

a. 8:15

a quarter after _____

b. 4:45

a quarter _____

c. _____ : _____

a quarter till 12

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Using the Calendar

The calendar is divided into *weeks*. Each week has seven days. The names of those days are written in a row, from Sunday through Saturday (or sometimes from Monday through Sunday), above the numbers.

The week from the 8th through the 14th is highlighted. It is seven days.

What day is one week after March 18th?

It is the day directly under it on the calendar,

March 25th. You could also add seven to the number of the day: $18 + 7 = 25$.

| March | | | | | | |
|-------|-----|-----|-----|-----|-----|-----|
| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | 31 | | | | |

What day is one week after August 25th?

It is September 1st, because it would be directly under the number 25 if we continued writing the days of September in the boxes.

What day is three weeks after August 25th?

You need to “jump” down three rows. First go from August 25th to September 1st on the next calendar, and then two weeks more from there. September 15th is exactly three weeks later than August 25th.

| August | | | | | | |
|--------|-----|-----|-----|-----|-----|-----|
| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
| | | | | | | 1 |
| 2 | 3 | 4 | 5 | 6 | 7 | 8 |
| 9 | 10 | 11 | 12 | 13 | 14 | 15 |
| 16 | 17 | 18 | 19 | 20 | 21 | 22 |
| 23 | 24 | 25 | 26 | 27 | 28 | 29 |
| 30 | 31 | | | | | |

September days

What day is six weeks after August 14th?

Go down six rows, but skip from August 28th directly to the first Thursday of September, and then on from there. It is September 25th.

| September | | | | | | |
|-----------|-----|-----|-----|-----|-----|-----|
| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
| | | 1 | 2 | 3 | 4 | 5 |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 27 | 28 | 29 | 30 | | | |

What day is three weeks before September 10th?

One week before that is September 3rd. Go up one more week to August 27th, and then one more to August 20th.

What day is two months after August 10th?

Just change the name of the month: it is October 10th.

1. Do the activity **Earlier and Later**. (See the chapter introduction.)

2. Find the later or earlier dates using the calendars.

a. November 6th

four days earlier: _____

b. November 30th

five days later: _____

c. November 21st

one week earlier: _____

d. November 22nd

two weeks later: _____

e. November 19th

four weeks later: _____

f. December 6th

two weeks earlier: _____

g. December 26th

four weeks later: _____

h. January 14th

five weeks earlier: _____

| November | | | | | | |
|----------|-----|-----|-----|-----|-----|-----|
| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
| 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| 8 | 9 | 10 | 11 | 12 | 13 | 14 |
| 15 | 16 | 17 | 18 | 19 | 20 | 21 |
| 22 | 23 | 24 | 25 | 26 | 27 | 28 |
| 29 | 30 | | | | | |

| December | | | | | | |
|----------|-----|-----|-----|-----|-----|-----|
| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
| | | 1 | 2 | 3 | 4 | 5 |
| 6 | 7 | 8 | 9 | 10 | 11 | 12 |
| 13 | 14 | 15 | 16 | 17 | 18 | 19 |
| 20 | 21 | 22 | 23 | 24 | 25 | 26 |
| 27 | 28 | 29 | 30 | 31 | | |

| January | | | | | | |
|---------|-----|-----|-----|-----|-----|-----|
| Sun | Mon | Tue | Wed | Thu | Fri | Sat |
| | | | | | 1 | 2 |
| 3 | 4 | 5 | 6 | 7 | 8 | 9 |
| 10 | 11 | 12 | 13 | 14 | 15 | 16 |
| 17 | 18 | 19 | 20 | 21 | 22 | 23 |
| 24 | 25 | 26 | 27 | 28 | 29 | 30 |
| 31 | | | | | | |

- A summer camp was scheduled to start on July 15th and run for five days, but it was delayed by one week. When did it start? What was the last day of the camp?
- Jane's dentist appointment was scheduled for the 23rd of November, but was postponed by two weeks because she was sick. What was the new date?
- Today is November 2nd. How many days is it until Mom's birthday on December 5th?
- Mary borrowed a book from her friend on February 18th. Her friend asked Mary to return it within 2 months. By when should Mary return it at the latest?

Mixed Review Chapter 5

1. Add and subtract using mental math. (Various lessons/Ch1)

| | | |
|---|---|---|
| a. $76 - 51 = \underline{\hspace{2cm}}$ | b. $82 - 39 = \underline{\hspace{2cm}}$ | c. $65 - 36 = \underline{\hspace{2cm}}$ |
| d. $385 + 4 = \underline{\hspace{2cm}}$ | e. $552 + 9 = \underline{\hspace{2cm}}$ | f. $795 + 8 = \underline{\hspace{2cm}}$ |

2. Find the difference between: (Concept of Difference/Ch1)

| | | |
|--------------|----------------|----------------|
| a. 24 and 51 | b. 300 and 987 | c. 437 and 442 |
|--------------|----------------|----------------|

3. One digital music player costs \$89 and another costs \$17 less than the first. If you buy two of the cheaper players, how much do they cost together? (Word Problems Practice/Ch2)

Is your answer reasonable? Explain.

4. Multiply. (Various lessons/Ch4)

| | | | |
|---|---|--|---|
| a. $9 \times 3 = \underline{\hspace{2cm}}$ $7 \times 4 = \underline{\hspace{2cm}}$ $10 \times 0 = \underline{\hspace{2cm}}$ | b. $12 \times 2 = \underline{\hspace{2cm}}$ $3 \times 8 = \underline{\hspace{2cm}}$ $6 \times 4 = \underline{\hspace{2cm}}$ | c. $7 \times 8 = \underline{\hspace{2cm}}$ $9 \times 7 = \underline{\hspace{2cm}}$ $4 \times 8 = \underline{\hspace{2cm}}$ | d. $6 \times 6 = \underline{\hspace{2cm}}$ $12 \times 5 = \underline{\hspace{2cm}}$ $3 \times 7 = \underline{\hspace{2cm}}$ |
|---|---|--|---|

5. Solve. Write a number sentence for each problem. You can also draw pictures to help!

(Understanding Word Problems, Part 1/Ch3)


a. Every day for a week, Derek read two books. How many books did he read in total?

b. Mateo put three pencils in each of the seven pencil cases, and in the eighth one he put five. How many pencils did Mateo put in the pencil cases?

Review Chapter 5

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


a.



The time now → _____ : _____

10 min. later → _____ : _____


b.



_____ : _____

_____ : _____

c.



_____ : _____




_____ : _____

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

a. from 8:39 to 9:13







b. from 11:51 to 12:26

3. How many minutes is it from the time on the clock face until the given time?





| | | |
|---|---|--|
| <p>a. from</p>  <p>to 1:05</p> <p>_____ minutes</p> | <p>b. from</p>  <p>to 7:55</p> <p>_____ minutes</p> | <p>c. from</p>  <p>to 11:00</p> <p>_____ minutes</p> |
|---|---|--|

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Counting Coins

| | | | | | |
|--|--|--|---|--|--|
| <p>Let's review coins!</p> |  a nickel _____ ¢ |  a dime _____ ¢ |  a quarter _____ ¢ |  a loonie _____ ¢ |  a toonie _____ ¢ |
| <p>Count up, starting with the coin(s) with the largest value.</p> |  200¢ 300¢ 375¢ 385¢ 395¢ 400¢ = \$4.00 | | | | |

- (Optional) Do the **Counting Money** activity from the chapter introduction.
- Count the coins.

| | |
|--|---|
|  a. _____ ¢ |  b. _____ ¢ |
|  c. _____ ¢ |  d. _____ ¢ |

- Fill in the patterns.

| | |
|---|--|
| <p>a. 4 quarters = _____ cents</p> <p>5 quarters = _____ cents</p> <p>6 quarters = _____ cents</p> <p>7 quarters = _____ cents</p> | <p>b. 9 nickels = _____ cents</p> <p>10 nickels = _____ cents</p> <p>11 nickels = _____ cents</p> <p>12 nickels = _____ cents</p> |
|---|--|

4. Write how many quarters, dimes or nickels you need to make these amounts.

a. _____ quarters = 150 cents

_____ quarters = 200 cents

_____ quarters = 250 cents

b. _____ nickels = 45 cents

_____ nickels = 65 cents

_____ nickels = 85 cents

5. a. Dorothy says $130¢ = 3$ quarters and 11 nickels, and Daniel says $130¢ = 5$ quarters and one nickel. Who is correct?

b. Find another way to make $130¢$ with quarters and nickels.

6. Use two different kinds of coins to make the asked amount. Find two ways to do so.

a. **90¢**

_____ quarters + _____ nickel(s)

_____ quarters + _____ nickel(s)

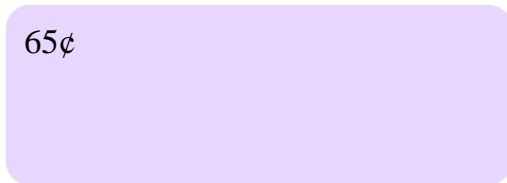
b. **105¢**

_____ quarters + _____ dime(s)

_____ quarters + _____ dime(s)

7. Draw **coins** to make the money amounts. Make them in two different ways.

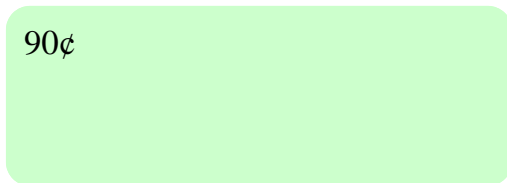
a. 65¢



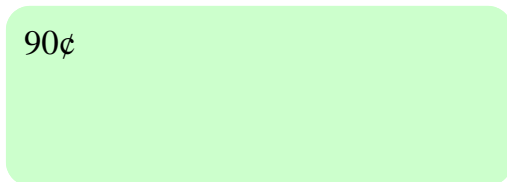
65¢



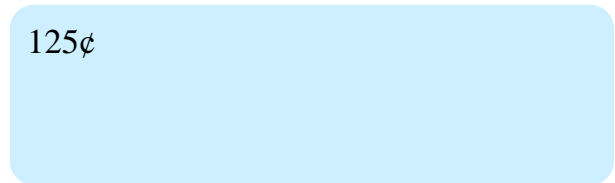
c. 90¢



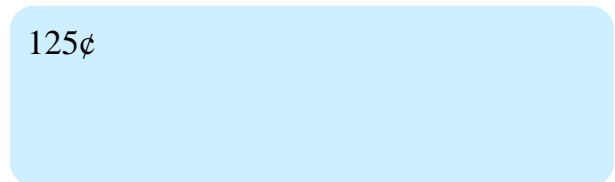
90¢



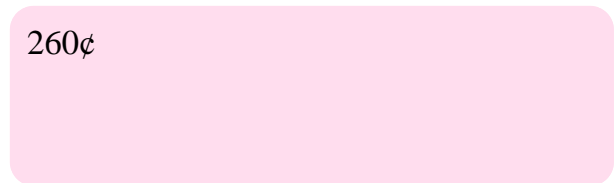
b. 125¢



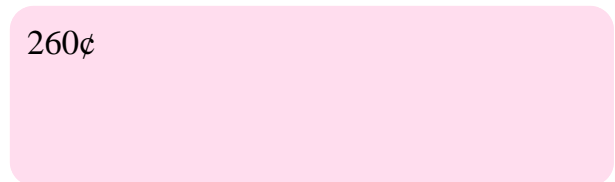
125¢



d. 260¢



260¢



Dollars

Here you see bills with dollar amounts.



Write the “\$” symbol in front of dollar amounts.

First write the dollars, then a decimal point, and then the cents.



\$5.30



\$21.35

1. How much money? Write the amount.



a. \$ _____



b. \$ _____



c. \$ _____



d. \$ _____