For Joshua

Milestone Maths C1

by

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Answers

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Milestone

Introduction

Welcome to the second book in Milestone Maths level C. This book contains 40 lessons and is intended to be used by an average student in term two of year two in an Australian school year. This allows for four lessons per week in a regular term. If desired, the fifth day may be used to complete any outstanding work, for review, or extension or for some of the practical/enrichment activities that are suggested from time to time in this book and on the Milestone Maths website. You may also elect to complete a drill on the fifth day or to take a break from maths. Please see the next page for advice on how to structure and pace lessons for children with special needs.

RESOURCES

The only essential resource for this curriculum is a set of Sumstix (also known as Cuisenaire rods). These may be purchased from the same place that you obtained this book. Optional resources include Number Bond Flashcards and Number Game Cards. Check the Milestone Maths website for details.

www.milestonemaths.com.au

PARENT INVOLVEMENT

Milestone Maths is designed to foster independent learning as quickly as possible. For this reason, parent instructions are kept to a minimum and are contained within this book. The next few pages contain introductions to each of the milestones and some teaching notes for selected lessons. It would be a good idea to consult these pages when your child commences each milestone If you child is not yet reading, you will have to read the instructions for each lesson.

At this level, it is still advisable to demonstrate examples practically whenever possible. So, when counters or Sumstix are drawn in the student instructions and examples, you should recreate the same examples using actual concrete materials - use whatever items you fancy for counters (buttons, beans, beads, small toys, found natural materials etc). Also, when algorithms are described in the text, it would be a good idea to demonstrate the same examples by writing out each example on a separate piece of paper or a black/ whiteboard one step at a time. After you have completed the demonstration, which should only take a few minutes, you should read the instructions with, or to, your child and make sure that they understand them then, allow them to complete the rest of the lesson on their own. If your child is not yet reading independently, you will need to read word problems and may need to read instructions for review activities that are not yet familiar to the child.

QUESTIONS OR COMMENTS?

If you have any questions whatsoever about any aspect of this course's implementation, or if you need help understanding any maths related concept, please do not hesitate to contact the author at

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EXTENSION WORK

Some activities in this book are marked with a graduation cap icon. These activities are more challenging and intended to stimulate the more advanced students. Use your discretion as to whether require your child to attempt these activities. If the child is keen to have a go, let them do so, but give them help as and when they need it but respect their wishes if they refuse help - the struggle to find the solution will do them the world of good.

DRILLS

Drills are an essential part of learning in mathematics. A drill is located at the end of every lesson. If your child does not have the patience to do these drills, please see the Milestone Maths website for suggested alternatives. Visit milestonemaths.com.au/not-negotiable/

ADAPTATIONS FOR CHILDREN WITH SPECIAL NEEDS

If your child has special learning needs, there are a number of adaptations possible.

For older yet illiterate students: you should read all instructions to the student just as you would to a young child that is still learning to read.

For children who have difficulty writing: you may act as scribe and have the child tell you what to write. When numbers or equations are required, have the child "build" the answers using the number game cards. Also, you may use the number bond flashcards for drills instead of the written drills or you could treat the written drills as oral drills until writing is easy. Unless the child has a physical handicap that makes writing difficult or impossible, I would suggest that you gently encourage them to do more and more writing on their own every day. Begin by taking turns with the pencil - you write one number then the child writes one, etc and slowly increase the amount of writing that your child does until they achieve independence.

For children who need a slower pace: some lessons could consist entirely of warm up/review activities or the student book activities could be assigned over two or more days.

Extra writing practice can be done on a reusable drawing board (eg whiteboard, LCD tablet, etc.), on scrap paper or in a separate exercise book.

For children who need a faster pace: If your child is finding the lessons very easy and is learning the concepts quickly, you may consider doing two lessons a day and completing the Review and Practice section of only one of the lessons. Special care needs to be taken that the child is mastering the drills at this pace as well. Over learning is always a good thing however, a particularly bright child will need to be challenged to maintain motivation.

G'day, I'm Cookie Kookaburra and I'm here to help you learn your maths.

There's lots of exciting things to learn this year and we have some fun activities to do so, grab your sumstix and a pencil and let's get started!
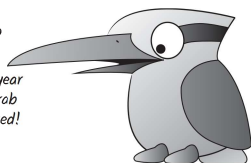
Parent Notes

Milestone 1

INTRODUCTION

This milestone summarises the most important concepts, skills and number facts taught in Level B of Milestone maths. Even if your child has just completed level B and did very well with it, you should complete this review as there are some extensions introduced and some new activities.

This first Milestone can also be used as an extended placement test for those new to the curriculum. If you find that many of the concepts are unfamiliar or difficult for your child, consider beginning with Level B and working through it as quickly as the child can manage before beginning this level. Because the lessons are generally short and the number of lessons has been restricted to 40 per term, it is easy for the average child to 'catch up' even if they do begin one or more levels below their nominal year level in school.

You should encourage your child to use Sumstix to solve any addition or subtraction problems that they find difficult. Finger counting should be discouraged and avoided at all times.

CONCEPTS AND SKILLS REVIEWED

By the completion of this milestone your child should have mastered the following:

- Counting to 20 and using Sumstix to represent numbers
- Using Sumstix to model and solve addition and subtraction problems within 10
- Using number bonds to represent addition and subtraction problems withing 10
- Finding and recognising fractions of objects
- Using Sumstix to find fractions of quantities
- Measuring lines to the nearest centimetre

ASSUMED KNOWLEDGE

Familiarity with Sumstix (or Cuisenaire rods) and numbers to twenty are assumed knowledge at this level. If your child is new to Sumstix, you should give them an opportunity to "play" with them and explore their properties. Point out that the longer sticks can be 'measured' using the cube (or white stick). For example, a red Sumstix is 2 white Sumstix long and we will often use this fact to represent the number 2 when working with whole number arithmetic.

The child also needs to understand number bonds. The concept is reviewed in lesson 2 and you should ensure that your child understands the idea before moving on. Number bonds are a very powerful visualisation tool that allow a child to appreciate the duality between addition and subtraction. The top number in a number bond represents the total and the two numbers on the base of the number bond represent the parts. A single number bond can represent up to 4 different equations: 2 addition equations and 2 subtraction equations.

GAME IDEAS

GUESS MY NUMBER

An excellent game to practice number order is "guess my number." The leader chooses a secret number in a given range (the range can be anything from 1-10 through to 1-1000, depending on the ability and age of the players). The other player/s tries to guess the number. After each guess the leader says, "higher" or "lower" as appropriate. For example, if the secret number is 7 and the player guesses 5, the leader would say, "higher."

Young children may find it hard to be the leader but it is excellent practice for them to do so. Provide a number line for them to look at while decided if the number is higher or lower than the guess.

MAKE TEN

To practice addition and subtraction simultaneously you can play "make 10" (where 10 can be exchanged for any number you choose). Call out random numbers that are less than 10. The child should respond with the number needed to make 10.

For variety, you could use Sumstix and play a silent version. You hold up a random stick and

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the child selects and holds up the stick required to make 10. Increase interest by having a time limit to respond.

WHAT'S MISSING?

A variation on "make ten" that can also be used to practice subtraction and addition facts is "what's missing?" Agree on a total. Each player is given the total number of small objects. The objects should be small enough that the total fits in the players' hands. Match sticks work well.

The lead player hides some of their objects and then shows the remainder to the other player. The other player should take the number of objects required to make the total from their group and show this to the lead. If they are correct, they become the leader for the next round.

ALTERNATE COUNTING

A fun way to reinforce counting concepts, and to prepare the way for skip counting, is to alternate count with your child. You say, "one," then your child says, "two," followed by you saying, "three," and the child says, "four," etc. until your reach whatever total you like.

An even more entertaining way to do this is to play a variation on "duck, duck, goose" where every multiple of a number is replaced by some silly sound. If you want to practice counting by three, for example, the child/ren will say, "One, two, ding, four, five, ding, seven, eight, ding," etc. "Ding" can be replaced by anything you choose and could even include clapping hands, stamping feet or making a sound using some sort of musical instrument.

This can be extended with more children and is an excellent way to build focus and attention.

LESSON NOTES

LESSON 1

If your child has difficulty with the sequencing activity, give them the corresponding cards from the Number Game Deck (or write them on separate scraps of paper) and have them sort the numbers that way. If that is too difficult, the child can count out groups of small objects (like beads, small coins or uncooked pasta shapes) and arrange the groups from biggest to smallest (or vice versa).

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LESSON 2

This lesson reviews the basic concept of addition. If your child has not yet learned the meaning of addition, model the process by taking two groups of toys and putting them together to find a total.

The example number bond given on page 6 can represent the equations:

$2 + 6 = 8$; $6 + 2 = 8$; $8 - 2 = 6$ and $8 - 6 = 2$.

Encourage your child to use Sumstix to solve any of the addition problem on page 7 that they do not know the answer to. Remember that finger counting should be discouraged at all times.

LESSON 3

This lesson reviews the idea of commutativity of addition. Commutativity of addition is the property that allows you to add the numbers in any order. For example, $3 + 6$ is the same as $6 + 3$.ng problems are a lead in to subtraction which is reviewed in Lesson 4.

LESSON 4

This lesson reviews subtraction and the use of number bonds to explore the relationship between addition and subtraction. If your child does not understand the concept of subtraction, model the idea using objects. Start with a group of objects and ask the child to take away a few of them. Then ask the child how many remain. The best term to use for subtraction at this age is, "take away," as in, "seven take away two."

Show the child that the number bonds and Sumstix patterns for subtraction look exactly the same as those for missing number addtion problems.

LESSON 5

While we generally discourage unit counting as a strategy for solving addition problems, it is appropriate to use for adding three or less to an arbitrary number and so counting on is a skill worth mastering.

LESSON 6

Children who have completed level B of Milestone Maths should be fairly comfortable with identifying the fraction of a shape that is shaded. They should

also be able to easily shade in a given fraction (halves and quarters) of a shape.

Remind your child that the bottom number in a fraction is the number of pieces that we cut our object into (pizza, pie, cake etc) and the top number is the number of pieces we get for ourselves (or shade).

The remainder of this lesson extends the student a little beyond level B. In level B children learned how to find half of a quantity using Sumstix. First the child should make the number representing the quantity using Sumstix. Then they should search for a stick that can "cut in half" the number made.

This idea is extended to finding one quarter of an object. The idea is the same except now the child needs to find a stick such that four of them joined into a train are the same length as the number that we are trying to find one quarter of.

LESSON 7

The measuring activity should be reinforced with practice measuring real objects with a ruler.

The pictograms activity is fairly intuitive for most children, however, if your child does have difficulty with the concept, try making a 3D 'pictogram' using real objects that you have several of. Eg fruit from the fruit bowl, coloured building blocks, small toys etc.

Sort the objects based on some characteristic (type, colour, size etc). Once the objects are grouped together they can be arranged into neat rows to give the appearance of a pictogram. For further reinforcement you could ask your child to draw a picture of their 3D 'pictogram'.

LESSON 8

Checkpoints are unit tests. In general the child should be able to do checkpoints more or less independently once you have read any instructions.

If your child has particular difficulty with any of the activities in the checkpoint, consider pausing regular lessons for a while and revising the skill or concept.

The child may use Sumstix to solve any problems that need them for at this stage.

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Milestone 2

INTRODUCTION

It is a "conventional wisdom" that a full understanding of place value is essential for children to excel in maths. After extensive research, experimentation and observation on the matter I have come to the conclusion that this is not really the case. Nevertheless, it is helpful for children to have a basic awareness of place value and the language associated with it.

CONCEPTS AND SKILLS TAUGHT

By the completion of this milestone your child should be able to:

- Group large collections of objects into tens to facilitate counting and count them accurately.
- Recognise the number of digits in a number.
- Read 2-digit numbers. Confusion between 12 and 21 should be deminishing.
- Represent 2-digit numbers with Sumstix.
- Represent 2-digit numbers in expanded form.
- Enter 2-digit numbers on a place value chart.

LESSON NOTES

LESSON 9

This is a simple introduction to some of the language of place value: specifically the term digits and what it means.

The rest of the lessons in Level C will follow a similar format to this one. The new material for the lesson appears. Usually the lesson will begin with a brief explanation of the concept being taught. When appropriate a worked example will be given and then a section titled "Lesson Practice" will give the child opportunity to practice what they have learned.

Following the main lesson is a "Review and Practice" page. This is generally, but not always, divided into four sections. This section provides systematic, spiral review and practice of the most important concepts and skills covered in the main lessons. This spaced repetition is essential for developing a deep understanding and long-term memory for the concepts taught as well as fluency in the skills required to succeed in maths.

LESSON 10

Counting by tens was introduced in level B but not emphasised. If your child has not fully mastered this skill, now is the time to do so. You can practice the skill by teaching the child to total 10c coins or $10 notes. Another graphic example is to take a relatively large (close to 100) collection of small objects (beads, buttons, lego bricks, match sticks, straws) and have the child count them.

Begin the demonstration by asking the child to count the objects one-by-one. Most children will get tired of this very quickly so then you can point out to the child that there is a clever quick way to count the objects. This will usually meet with eagerness to learn the 'short cut.'

A number bond template is provided for every word problem in Student Book C1. Its use is optional but it is a good idea for the child to get in the habit of creating a visual model of a problem to aid solving it. This habit will serve the child well when the problems become more complicated in later levels.

The last activity reviews pictograms but extends them to practice counting by tens.

LESSON 11

This lesson is a minor extension of the previous lesson. If you did the practical activity last lesson, this should be easy for your child. I would recommend repeating the practical activity before completing this lesson.

LESSON 12

If your child is still confusing two digit numbers, be sure to practice number reading often using number flashcards or whenever the opportunity presents itself. Whereever you see a two digit number during your day-to-day activities, ask your child to read it.

LESSON 13

If the child is comfortable with counting groups of objects by dividing them into tens, this lesson should be an easy extension. You simply need to explain to the child that our group of ten objects will now be replaced with a 10 Sumstix.

Practice making random 2-digit numbers with

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Sumstix until it is easy for the child. You do not need to do this all at once: repeat the activity before the next several lessons until your child gets the idea.

You will note that this lesson is three pages long. Occasionally this occurs to allow for lessons that require either a lot of explanation for the student or 'bulky' practice activities. All lessons end with a drill so you should train your student to keep working until they complete the drill.

LESSON 14

Expanded form can be useful for performing mental calculations but only if it is well mastered. We introduce expanded form early to give the child ample opportunity to master it before encountering mental arithmetic with 2 digit numbers.

LESSON 15

If your child has understood the previous lessons, this lesson should be easy. To write a number on a place value chart you simply need to write how many orange stix you use to make the number in the tens column and the value of the other stick in the ones column.

Milestone 3

INTRODUCTION

This Milestone introduces addition with totals over ten. The main aim at this stage is to show how the tools the child already has can be applied to solve harder addition and subtraction problems. In particular, the child will learn how to use number bonds and Sumstix to solve additions with totals over ten as well as finding missing numbers in subtraction problems.

In later Milestones strategies for solving such problems without Sumstix will be covered. Eventually, all the single digit combinations should be memorised. The drills are essential for this.

CONCEPTS AND SKILLS TAUGHT

By the completion of this milestone your child should understand the following:

- Regrouping objects can help to easily solve an addtion problem
- How to model and solve addition problems with Sumstix when the total is greater than 10

• How subtraction problems relate to number bonds and Sumstix patterns

• How to solve missing number subtraction problems.

PRACTICE IDEAS

To understand some concepts in this milestone, it is essential that the child can recognise the Sumstix patterns for numbers greater than ten. If your child is still unsure of these patterns, you should practice the skill often until they have mastered it. Have the child build numbers from 11-20 using Sumstix. You could start by extending the basic staircase pattern to go from 1-20.

Pull the 11-20 cards out of the Number Game Cards deck or make your own using scraps of paper or card and use them to select random numbers to make with Sumstix.

To prepare for later lessons in this Milestone, the child can also practice decomposing the numbers between 11 and 20 using Sumstix. By this we mean that the child can try to find all the addition facts for a particular number using Sumstix. See the illustration below.

LESSON NOTES

LESSON 17

This lesson is actually introducing the "make ten" strategy but in an indirect way. The best way to introduce the lesson is to remind the child how they counted a large number objects by dividing it into groups of ten plus a left over.

You may wish to model this several times with some small objects. Take two groups of objects (ensure that there are more than ten and less than 20 in total). Then show the child that we can work out the total number of objects by 'borrowing' objects from the smaller pile and adding them to the bigger pile so that it contains ten objects.

LESSON 18

This lesson shows how we use Sumstix to solve sums when the answer is over ten. The first step in the process is to make the sum by making a Sumstix train representing the two numbers being added. Then we recognise that the train is longer than an orange stick so we place the orange stick in front of the train and

find the other coloured stick that will "fill in" the gap that remains. The child can then read off the number.

LESSON 19

This lesson is the number bond equivalent of the previous lesson. It is very important that the child develop a thorough understanding of how to relate a number bond to the parts of addition and subtraction equations.

LESSON 20

Solving missing number problems using Sumstix with totals over 10 is the same as doing it for numbers up to 10 with one exception: the first step is to make the number using a 10 stick and one other stick.

LESSON 21

Since subtraction is essentially identical to finding the missing number in an addition problem, it is a good idea to begin the lesson by asking the child to show you what they did in the previous lesson. Have the child use Sumstix to solve a few missing number equations that you write on a scrap of paper or whiteboard. Suitable examples: $5 + \_\_\_ = 12$; $9 + \_\_\_ = 13$; $8 + \_\_\_ = 15$; $6 + \_\_\_ = 11$.

LESSON 22

A major aim of this lesson is to work systematically. Ensure that the child understands that the first part in the number bonds should count up from one.

The main difficulty the child may encounter is that the second number will often be greater than 10. Assure the child that this is OK and easy to manage. When the child is finding the missing number, they should first place a 10 stick in the gap, then they simply find a stick that will fill the remaining gap.

An example of finding a missing number that is greater than 10 is shown in the digram below.

The last exercise in the review reflects back to the main lesson. Allow your child to find any four number bonds (they do not need to work

systematically when the question is worded as this one is).

LESSON 23

This lesson presents an advanced concept for this age group, but with the aid of number bonds and Sumstix is it achievable.

The most important preparation the child needs for these types of problems is to thoroughly understand how the parts of a number bond correspond to the parts of a subtraction equation. One way to reinforce this is to draw a number bond and the corresponding subtraction equations. Then have the child highlight the matching parts using matching colours. See the diagram below for an example.

$$13 - 5 = 8$$

$$13 - 8 = 5$$
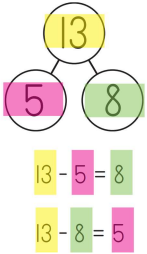
Milestone 4

INTRODUCTION

This short Milestone introduces some basic geometric language and concepts to the child.

CONCEPTS AND SKILLS TAUGHT

By the completion of this milestone your child should know the following terms and be able to describe shapes using them:

• Straight and curved lines

• Intersecting and parallel lines

• Symmetry

Lesson Notes

LESSON 25

The instructions to the student are comprehensive. The only point that may cause difficulty is that you need to remember that a side ends at a corner point. So, in the review question at the bottom of page 88, the floral motif has 12 sides, not 6, because each 'petal' has a corner point on the outside edge.

Milestone 5

Introduction

Addition and subtraction strategies are a good stepping block to learning the maths facts. They are not an end in themselves because the basic facts need to be mastered to the point of virtually instant recall in order to solve higher level problems. This milestone is a stepping stone towards the required mastery. If implemented correctly, the drills (at the back of this book and in the supplementary resources) will ensure complete mastery of the facts. If your child finds these strategies difficult, encourage them to choose Sumstix over finger counting to solve problems.

The strategies presented in this Milestone are the ones most likely to be useful for solving more difficult problems in later levels. For example, the add 9 strategy is easily extend to adding 9 to any arbitrary number with 2 or more digits. It will also form the foundation for adding any number that ends in 9 to other numbers.

CONCEPTS AND SKILLS TAUGHT

By the completion of this milestone your child should be able to:

• Add 1 or 2 to a number by "counting on".

• Add 7, 8 & 9 using the "make ten" strategy.

• Using the doubles plus one strategy.

• Partition to subtract from numbers greater than ten.

LESSON 30

Skip counting on by two is a good "fall back" strategy for adding two to any number. You may allow your child to use their number chart to complete these problems.

LESSON 31

As the lesson text states, the child has actually been adding ten to single digit numbers since they started making the numbers 11-19 using Sumstix.

Introduce the lesson by taking out the Sumstix and asking the child to make a train that corresponds to 5 + 10 (for example). Then ask the child what number they have made. They should be able to answer 15 then explain to the child that adding 10 and making a number in the range 11-19 are virtually the same thing.

LESSON 32

Adding nine is the same as adding 10 and then subtracting 1 or vice versa. This strategy is particularly useful to learn because it is just as easy to apply to any arbitrary number as it is to apply to a single digit.

This is a specific case of the "make ten" strategy. The next two lessons show other specific cases of it.

For a different way to explain this concept, see lesson 34.

LESSON 33

Adding 8 is very similar to adding 9.

The first review exercise (page 114) combines logic with basic math fact knowledge. Start at the bottom left most empty box. Next fill in the box above it. Then the box next to that one. At that point the rest of the puzzle should be straight forward.

LESSON 34

This strategy will only be useful to the child if they know their facts below ten really well.

The child may skip the extra working on last review exercise if they are able to solve those problems without it.

LESSON 35

There is something about the symmetry of doubles that makes them easy for most people to memorise. However, if your child does not find memorising them easy, have them build the doubles with Sumstix often to get a "feel" for them and drill them often using flashcards.

LESSON 36

The "double plus one" is a very useful strategy for mental arithmetic using larger numbers. It can be applied whenever two consecutive numbers need to be added together. If your child gets very good at this strategy they are likely to extend it to "doubles plus two" or even "doubles plus three" on their own.

LESSON 37

These "hard facts" should be relatively easy for students who have completed level B of Milestone Maths.

LESSON 38

We can call this the "make change" strategy for subtraction. It is yet another strategy which we will extend to larger numbers in level D.

The first Review and Practice activity is an example of simultaneous equations that only requires simple logic to solve. The student should start by working out the value of the square (which should be obvious from the last equation). Then they can treat the middle equation as a missing number problem.

LESSON 40

This lesson reviews the key concepts and skills taught in this book. Your child should be able to complete the lesson with little or no assisstance.
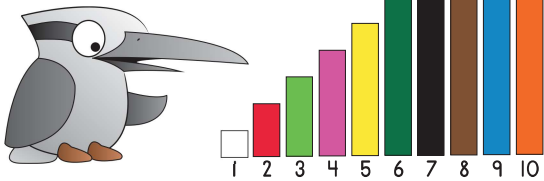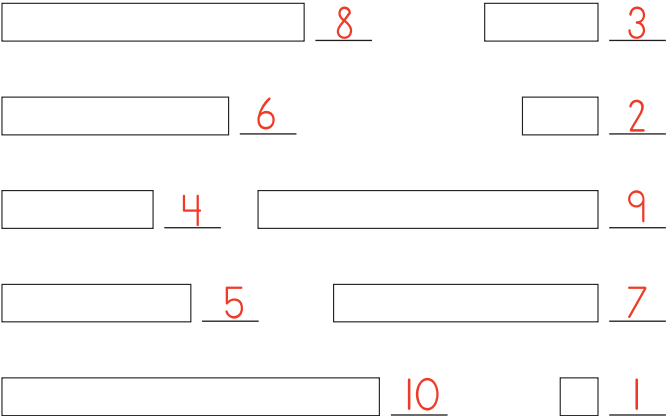
Lesson 1

REVIEW OF LEVEL B

### SUMSTIX AND COUNTING

We will use Sumstix a lot this year. Most of the time we will use Sumstix to represent numbers like this.

The Sumstix below are drawn full size (the same as the real ones). Measure each one against your set. Colour it in to match your set and then write the number that it represents on the line next to it.

8   3

6   2

4   9

5   7

10   1

We can use number lines to sort and compare numbers.

A number line can start at zero or at any other number.
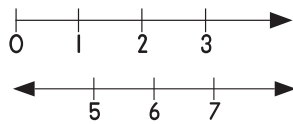
Label the number line. Start at 10.

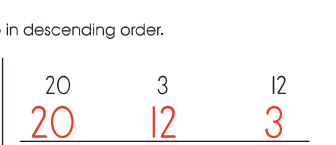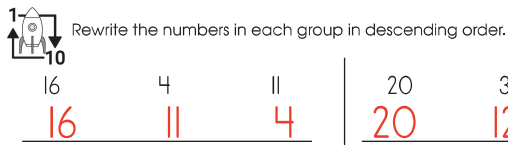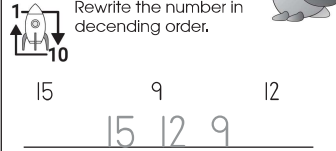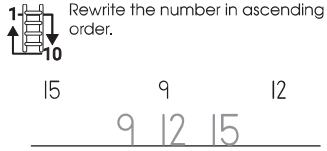| 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |

We can sort numbers two different ways:

1. Ascending order (smallest to biggest).
1 2 3 4 5 6 7 8 9 10

2. Decending order (biggest to smallest)
10 9 8 7 6 5 4 3 2 1

EXAMPLES

Rewrite the number in ascending order.

15   9   12

9   12   15

Rewrite the number in decending order.

15   9   12

15   12   9

Rewrite the numbers in each group in descending order.

16   4   11

16   11   4

20   3   12

20   12   3

Rewrite the numbers in each group in ascending order.

17   18   9

9   17   18

10   2   13

2   10   13

6 + 4 = 10	2 + 4 = 6	2 + 5 = 7
8 + 1 = 9	2 + 8 = 10	1 + 4 = 5
4 + 5 = 9	6 + 3 = 9	1 + 9 = 10
7 + 3 = 10	5 + 4 = 9	2 + 3 = 5
1 + 1 = 2	6 + 1 = 7	3 + 6 = 9
5 + 2 = 7	4 + 4 = 8	1 + 7 = 8
9 + 1 = 10	7 + 1 = 8	7 + 2 = 9
5 + 5 = 10	4 + 1 = 5	3 + 3 = 6
3 + 4 = 7	3 + 7 = 10	6 + 2 = 8
4 + 2 = 6	3 + 2 = 5	1 + 5 = 6
3 + 1 = 4	2 + 6 = 8	1 + 3 = 4
5 + 1 = 6	1 + 2 = 3	1 + 6 = 7
2 + 7 = 9	2 + 1 = 3	8 + 2 = 10
1 + 8 = 9	2 + 2 = 4	4 + 6 = 10
5 + 3 = 8	3 + 5 = 8	4 + 3 = 7

Drills help to build your maths brain so you should do one every day. Some days you might like to do a flashcard drill instead or you could tell someone the answers to these sums instead of writing them but make sure that you do at least one of these **every** *day!*

Why not make a game of it and time yourself? Then for the rest of the drills you can try to beat your "personal best."

Lesson 2

THE CONCEPT OF ADDITION

Addition is a short cut for counting. For example, if I have 2 white circles and 3 red circles I can add 2 plus 3 to find out that I have 5 circles all up.

      2 + 3 = 5
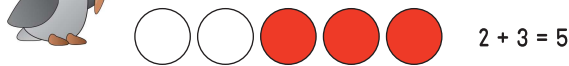
Colour each group of shapes using two different colours and then write an addition equation about each group. There is more than one right answer for this!

Answers will vary.
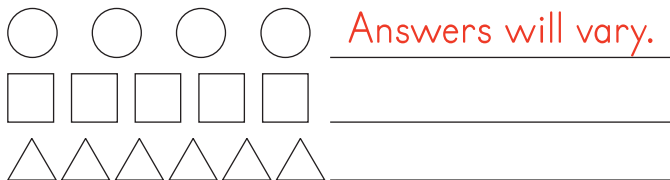
We can use Sumstix to help us solve addition problems.

EXAMPLE

6 + 2 = ____
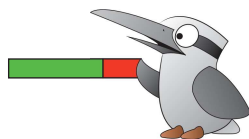
We can also represent this with a number bond!

6 + 2 = 8

Use Sumstix if you need them to find the answers to the following sums.

6 + 4 = 10	8 + 2 = 10	2 + 6 = 8
1 + 6 = 7	4 + 6 = 10	7 + 2 = 9
2 + 5 = 7	2 + 8 = 10	6 + 2 = 8
6 + 1 = 7	6 + 3 = 9	4 + 2 = 6
4 + 5 = 9	5 + 3 = 8	7 + 3 = 10

Write the sum represented by the number bond then use Sumstix to find the missing total.

      4 + 6 = 10

      3 + 6 = 9

      4 + 5 = 9

$2 + 3 = 5$ $2 + 4 = 6$ $4 + 6 = 10$

$2 + 5 = 7$ $3 + 4 = 7$ $7 + 1 = 8$

$2 + 1 = 3$ $3 + 6 = 9$ $1 + 2 = 3$

$2 + 6 = 8$ $1 + 3 = 4$ $8 + 2 = 10$

$1 + 1 = 2$ $1 + 6 = 7$ $4 + 5 = 9$

$1 + 9 = 10$ $7 + 2 = 9$ $5 + 1 = 6$

$6 + 3 = 9$ $1 + 8 = 9$ $6 + 2 = 8$

$2 + 8 = 10$ $6 + 4 = 10$ $1 + 5 = 6$

$2 + 2 = 4$ $9 + 1 = 10$ $3 + 7 = 10$

$2 + 7 = 9$ $3 + 5 = 8$ $3 + 2 = 5$

$1 + 4 = 5$ $1 + 7 = 8$ $3 + 1 = 4$

$5 + 2 = 7$ $3 + 3 = 6$ $4 + 3 = 7$

$6 + 1 = 7$ $7 + 3 = 10$ $4 + 4 = 8$

$8 + 1 = 9$ $4 + 1 = 5$ $4 + 2 = 6$

$5 + 3 = 8$ $5 + 5 = 10$ $5 + 4 = 9$

MORE ABOUT ADDITION

Remember that it doesn't matter which way we add Sumstix. A yellow and pink Sumstix train will always be the same length as a blue Sumstix no matter which colour you put at the front!
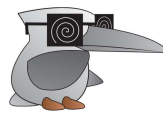
$5 + 4 = 9$ and $4 + 5 = 9$

Colour the blank Sumstix to make each pattern correct. Then write the two sums that can be represented by each Sumstix pattern.

$2 + 3 = 5$
$3 + 2 = 5$

$4 + 3 = 7$
$3 + 4 = 7$

$9 + 1 = 10$
$1 + 9 = 10$

Number bonds can also represent two different addition equations.

10
4   6
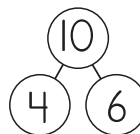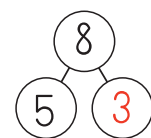
$4 + 6 = 10$
and
$6 + 4 = 10$
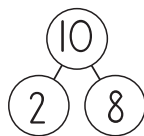
Sometimes we know the total and one part and we need to find the other part. We can use Sumstix and number bonds to represent and solve these problems as well.

$5 + 3 = 8$

8
5   3
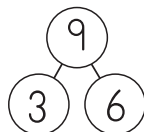
Write the two equations represented by the number bond.

10
2   8

$2 + 8 = 10$
$8 + 2 = 10$

9
3   6

$3 + 6 = 9$
$6 + 3 = 9$

Fill in the missing numbers. You may use Sumstix if you need them.

8
3   5

10
5   5

9
4   5

5
2   3

6
5   1

7
5   2

4
2   2

3
2   1
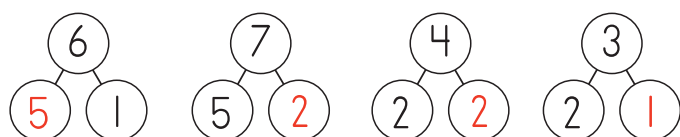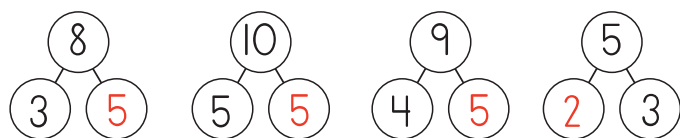
$1 + 4 = 5$ $3 + 4 = 7$ $1 + 6 = 7$

$1 + 5 = 6$ $2 + 7 = 9$ $1 + 7 = 8$

$6 + 3 = 9$ $5 + 1 = 6$ $2 + 2 = 4$

$3 + 2 = 5$ $4 + 3 = 7$ $4 + 2 = 6$

$1 + 8 = 9$ $3 + 7 = 10$ $5 + 2 = 7$

$1 + 8 = 9$ $5 + 4 = 9$ $2 + 7 = 9$

$5 + 5 = 10$ $2 + 2 = 4$ $4 + 4 = 8$

$2 + 4 = 6$ $3 + 5 = 8$ $5 + 3 = 8$

$2 + 3 = 5$ $3 + 3 = 6$ $3 + 6 = 9$

$6 + 2 = 8$ $2 + 1 = 3$ $3 + 2 = 5$

$8 + 1 = 9$ $7 + 2 = 9$ $4 + 3 = 7$

$1 + 7 = 8$ $7 + 3 = 10$ $9 + 1 = 10$

$1 + 6 = 7$ $5 + 1 = 6$ $1 + 1 = 2$

$1 + 5 = 6$ $4 + 1 = 5$ $6 + 1 = 7$

$3 + 1 = 4$ $3 + 4 = 7$ $1 + 2 = 3$

$6 + 3 = 9$ $1 + 9 = 10$ $1 + 4 = 5$

$2 + 6 = 8$ $8 + 2 = 10$ $3 + 7 = 10$

$2 + 5 = 7$ $7 + 1 = 8$ $1 + 3 = 4$

$4 + 6 = 10$ $5 + 2 = 7$ $6 + 4 = 10$

$4 + 5 = 9$ $2 + 8 = 10$ $4 + 2 = 6$

Lesson 4

SUBTRACTION

Subtraction is the fancy maths word for take away. We use subtraction to describe situations like the one in the picture below. The story that goes with it could be: Mum bought 8 apples. The kids came in and saw them in the fruit bowl and ate 3. How many were left?

$$8 - 3 = 5$$

Using number bonds and Sumstix, subtraction looks like this:
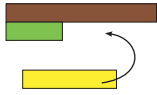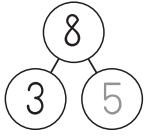
This looks just like a missing number addition problem!

Solve the following subtractions. You may use Sumstix or number bonds if you need to.

2 - 1 = 1	9 - 4 = 5	8 - 2 = 6
8 - 1 = 7	7 - 2 = 5	7 - 6 = 1
10 - 9 = 1	7 - 4 = 3	9 - 8 = 1
8 - 4 = 4	10 - 3 = 7	5 - 3 = 2
10 - 7 = 3	3 - 2 = 1	6 - 5 = 1
8 - 5 = 3	3 - 1 = 2	10 - 8 = 2
6 - 4 = 2	4 - 1 = 3	7 - 1 = 6

A number bond can represent up to 4 different equations: two additions and two subtractions.
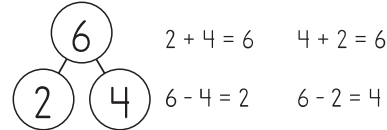
2 + 4 = 6	4 + 2 = 6
6 - 4 = 2	6 - 2 = 4

This fact will come in very handy when solving tricky problems later.
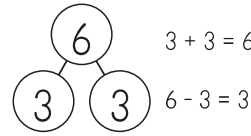
3 + 3 = 6

6 - 3 = 3

*But remember, a double only represents **2** equations!*

Write the equations that each number bond can represent.

1 + 2 = 3	2 + 1 = 3
3 - 1 = 2	3 - 2 = 1

1 + 7 = 8	7 + 1 = 8
8 - 1 = 7	8 - 7 = 1
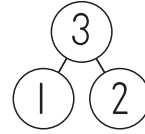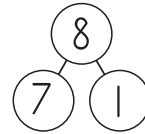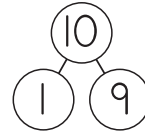
1 + 9 = 10	9 + 1 = 10
10 - 1 = 9	10 - 9 = 1
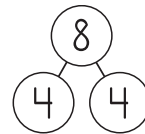
4 + 4 = 8	8 - 4 = 4

Drill 4

10 - 7 = 3	7 - 1 = 6	9 - 1 = 8
8 - 7 = 1	6 - 3 = 3	8 - 5 = 3
5 - 3 = 2	9 - 3 = 6	7 - 2 = 5
6 - 2 = 4	5 - 2 = 3	8 - 6 = 2
4 - 3 = 1	10 - 2 = 8	10 - 9 = 1
6 - 4 = 2	9 - 7 = 2	5 - 1 = 4
7 - 6 = 1	7 - 3 = 4	4 - 1 = 3
4 - 2 = 2	8 - 2 = 6	10 - 4 = 6
8 - 4 = 4	9 - 8 = 1	10 - 6 = 4
9 - 5 = 4	10 - 5 = 5	7 - 5 = 2
10 - 1 = 9	3 - 2 = 1	3 - 1 = 2
8 - 3 = 5	9 - 2 = 7	2 - 1 = 1
8 - 1 = 7	10 - 3 = 7	5 - 4 = 1
6 - 1 = 5	7 - 4 = 3	9 - 4 = 5
6 - 5 = 1	10 - 8 = 2	9 - 6 = 3

Lesson 5

COUNTING AND NUMBER LINES

Counting is the foundation of all maths so you need to get very good at it! Today we will practice counting to twenty. If this is still tricky for you, please practice, practice, practice counting as much as you can!

A number line is one way to show the order of numbers when we are counting.

Fill in the missing numbers on the number lines below.

Number lines can help us count on from a number. Write the next three numbers after each number below. The first one is done for you.

6, 7, 8, 9	7, 8, 9, 10
15, 16, 17, 18	10, 11, 12, 13
12, 13, 14, 15	16, 17, 18, 19
8, 9, 10, 11	13, 14, 15, 16
9, 10, 11, 12	17, 18, 19, 20
14, 15, 16, 17	11, 12, 13, 14

We can also count backwards. Write a countdown from 20 to 0 on the lines below.

🚀 **20-0**

20 19 18 17 16 15 14 13 12 11 10

9 8 7 6 5 4 3 2 1 0

🚀 Count back from the following numbers. The first one is done for you.

10, 9 , 8 , 7   11, ____, 10 9 8

20, 19 18 17   18, ____, 17 16 15

12, ____, 11 10 9   14, ____, 13 12 11

13, ____, 12 11 10   15, ____, 14 13 12

19, ____, 18 17 16   17, ____, 16 15 14

In the maze below there are two paths that start at the arrow pointing in. One leads out and the other is a dead end BUT both paths together make a picture. Both paths count forwards and you can only move left or right and up or down (no diagonal moves). Colour the squares following the numbers to reveal the picture.

20	11	19	1	17	10	18	16	7	7	3
4	14	4	5	6	9	3	14	13	13	19
1	2	3	11	7	11	19	20	2	16	17
16	20	4	1	8	6	14	18	14	15	11
4	6	5	7	9	10	11	12	13	5	9
6	7	20	5	20	17	6	9	20	10	10
5	8	9	9	8	3	7	18	19	10	13
18	19	10	11	12	3	16	17	19	4	18
20	9	13	17	13	14	15	20	14	4	4
3	10	14	7	9	10	13	18	20	2	6

10 - 8 = 2	4 - 3 = 1	8 - 4 = 4
6 - 3 = 3	8 - 2 = 6	9 - 6 = 3
9 - 1 = 8	6 - 1 = 5	7 - 6 = 1
8 - 7 = 1	8 - 6 = 2	8 - 3 = 5
3 - 2 = 1	10 - 5 = 5	10 - 6 = 4
10 - 3 = 7	10 - 7 = 3	9 - 7 = 2
5 - 1 = 4	10 - 2 = 8	4 - 2 = 2
10 - 9 = 1	3 - 1 = 2	7 - 2 = 5
5 - 3 = 2	5 - 2 = 3	10 - 4 = 6
8 - 1 = 7	9 - 8 = 1	7 - 1 = 6
6 - 4 = 2	7 - 4 = 3	5 - 4 = 1
6 - 2 = 4	9 - 5 = 4	7 - 3 = 4
7 - 5 = 2	6 - 5 = 1	4 - 1 = 3
8 - 5 = 3	10 - 1 = 9	9 - 2 = 7
9 - 4 = 5	9 - 3 = 6	2 - 1 = 1

Lesson 6

FRACTIONS

We use fractions a lot when we want to share stuff (like pizzas and pies).

In a fraction the top number tells us how many pieces are shaded and the bottom number tells us how many pieces the shape was cut into.

$\frac{1}{4}$

one quarter

$\frac{1}{2}$

one half

$\frac{3}{4}$
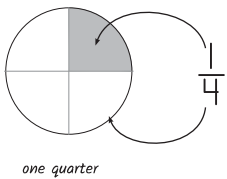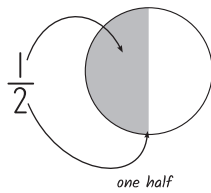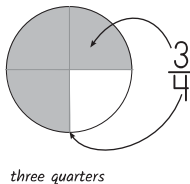
three quarters

mmmm.... pizza... Who said maths can't be yummy?!

Colour the fraction indicated of each shape.
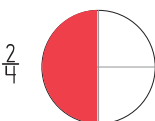
$\frac{3}{4}$ $\frac{2}{4}$ $\frac{1}{4}$

Answers can vary.

$\frac{1}{2}$ $\frac{1}{4}$ $\frac{4}{4}$
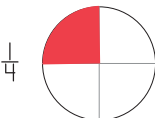
Sometimes you want to share things that you can't or don't need to cut up. Like cookies or toys. Then we need to find a fraction of a number. We can use Sumstix to help us do this.

EXAMPLES

John wants to share his ten cars with his little brother. How many cars does each boy get?
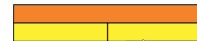
We find the stick that 'cuts in half' the ten.

$\frac{1}{2}$ of 10 = 5

Cindy has 8 stickers she wants to share between 4 friends. How many stickers does each friend get?

We find the stick that 'cuts in quarters' the eight. OR Four of which stick makes an eight?

$\frac{1}{4}$ of 8 = 2

Parent note: This is an extension of the above idea. It was not taught in level B so if your child doesn't "get it" just leave it for now. It will be explained more fully later in the year.

In the Review and Practice exercises corresponding to this, just cross out the 1/4 or replace it with 1/2.

Use Sumstix to find the fractions of the quantities.

$\frac{1}{4}$ of 8 = 4 $\frac{1}{2}$ of 6 = 3

$\frac{1}{2}$ of 14 = 7 $\frac{1}{2}$ of 8 = 4

$\frac{1}{2}$ of 12 = 6 $\frac{1}{2}$ of 10 = 5

$\frac{1}{4}$ of 16 = 8 $\frac{1}{4}$ of 2 = 1

$\frac{1}{2}$ of 18 = 9 $\frac{1}{4}$ of 4 = 2

If quarters are too tricky for you, just find one half of every number!

10 – 4 = **6**	10 – 5 = **5**	6 – 1 = **5**
10 – 6 = **4**	10 – 3 = **7**	9 – 1 = **8**
9 – 3 = **6**	7 – 5 = **2**	5 – 4 = **1**
8 – 7 = **1**	4 – 2 = **2**	9 – 8 = **1**
7 – 3 = **4**	10 – 8 = **2**	10 – 1 = **9**
9 – 4 = **5**	10 – 7 = **3**	8 – 2 = **6**
6 – 3 = **3**	3 – 1 = **2**	6 – 2 = **4**
8 – 6 = **2**	8 – 5 = **3**	5 – 1 = **4**
7 – 6 = **1**	8 – 3 = **5**	8 – 4 = **4**
5 – 3 = **2**	6 – 5 = **1**	4 – 3 = **1**
9 – 5 = **4**	5 – 2 = **3**	10 – 9 = **1**
7 – 2 = **5**	4 – 1 = **3**	10 – 2 = **8**
9 – 2 = **7**	6 – 4 = **2**	7 – 4 = **3**
8 – 1 = **7**	9 – 7 = **2**	7 – 1 = **6**
2 – 1 = **1**	9 – 6 = **3**	3 – 2 = **1**

Lesson 7

Measuring

We use rulers to measure small-ish things. Here are a couple of examples of measuring things to the closest centimetre.

Don't forget to line the zero on your ruler up with the start of the line!

3 cm
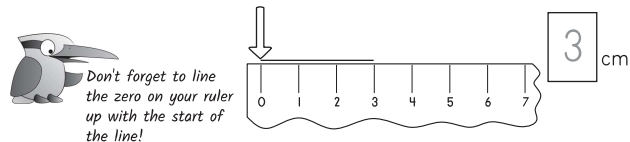
This line is a bit longer than 5 cm but it is closest to the 5cm mark. When measuring to the nearest cm, we still call this 5 cm.

5 cm

Find the length of each line to the nearest centimetre (cm).

4 cm

6 cm

3 cm
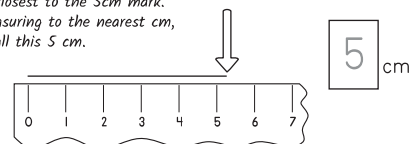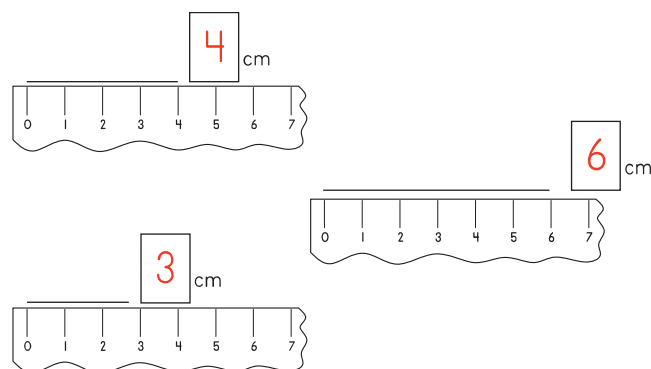
Pictograms

Julie's mum was in charge of the canteen at the local Sunday market. The pictogram shows how much of each food was sold one weekend.
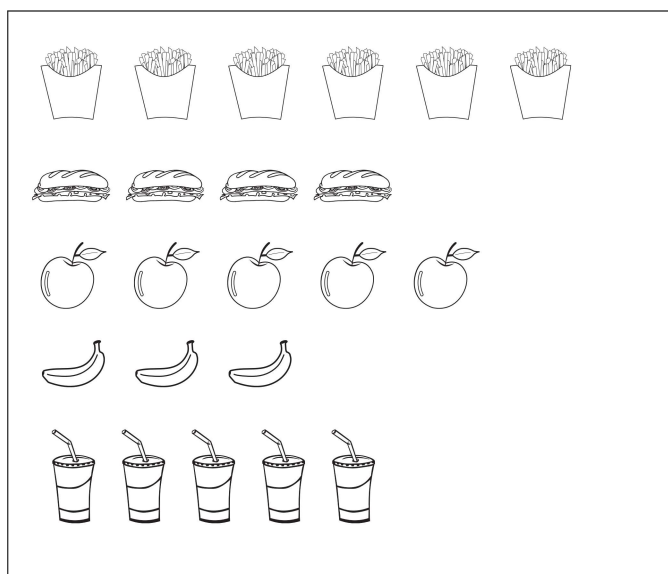
Which sold most?

How many more 🥤 than 🥪 were sold? **1**

How many pieces of fruit were sold? **23**

8 – 2 = **6**	7 – 1 = **6**	10 – 6 = **4**
8 – 6 = **2**	10 – 1 = **9**	9 – 5 = **4**
9 – 1 = **8**	9 – 4 = **5**	10 – 4 = **6**
9 – 7 = **2**	8 – 7 = **1**	6 – 2 = **4**
7 – 3 = **4**	4 – 1 = **3**	10 – 2 = **8**
9 – 8 = **1**	8 – 3 = **5**	6 – 4 = **2**
9 – 6 = **3**	5 – 4 = **1**	9 – 2 = **7**
3 – 1 = **2**	10 – 9 = **1**	10 – 8 = **2**
10 – 7 = **3**	4 – 2 = **2**	8 – 1 = **7**
5 – 3 = **2**	4 – 3 = **1**	3 – 2 = **1**
9 – 3 = **6**	7 – 6 = **1**	2 – 1 = **1**
10 – 5 = **5**	8 – 4 = **4**	10 – 3 = **7**
7 – 2 = **5**	6 – 1 = **5**	6 – 3 = **3**
6 – 5 = **1**	5 – 2 = **3**	8 – 5 = **3**
7 – 5 = **2**	7 – 4 = **3**	5 – 1 = **4**

Lesson 8

CHECKPOINT
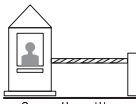
Measure the Sumstix drawn below with real ones. Colour and label the Sumstix with the correct numbers.

| 6 | 7 | 9 | 4 | 10 | 1 | 2 | 8 | 3 | 5 |
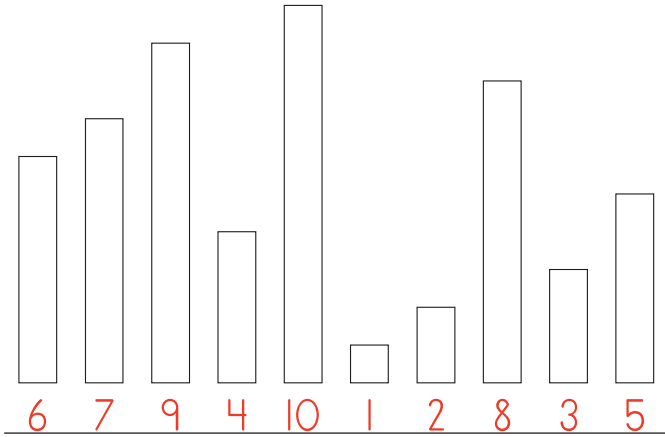
Write a subtraction equation to describe the picture.
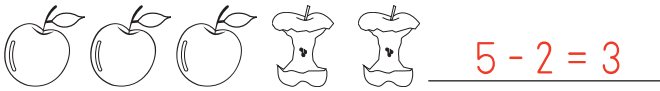
$5 - 2 = 3$

Find the length of each line to the nearest centimetre (cm).

2 cm

5 cm
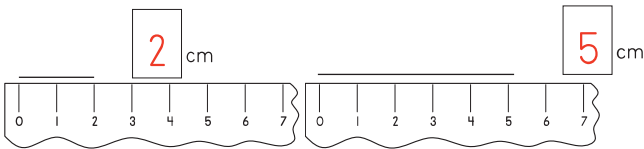
Fill in the missing number in each number bond and then write the four equations that the number bond can represent.

7 / 4 / 3

$3 + 4 = 7$ $7 - 3 = 4$

$4 + 3 = 7$ $7 - 4 = 3$

8 / 2 / 10

$2 + 8 = 10$ $10 - 2 = 8$

$8 + 2 = 10$ $10 - 8 = 2$

Fill in the missing numbers on the number line.

30 31 32 33 34 35 36 37 38 39 40
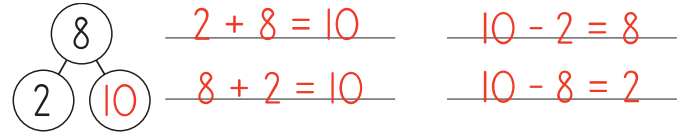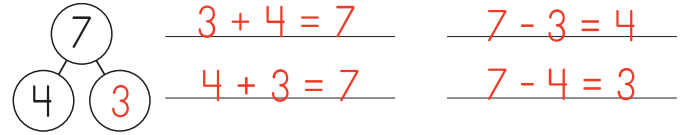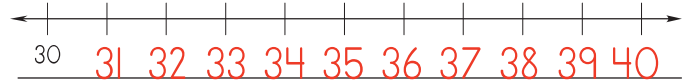
Fill in the missing numbers.

$6 - 2 = 4$	$6 + 2 = 8$	$1 + 2 = 3$
$7 - 1 = 6$	$5 + 1 = 6$	$4 - 2 = 2$
$8 - 6 = 2$	$10 + 0 = 10$	$7 + 3 = 10$
$2 + 8 = 10$	$10 - 2 = 8$	$1 + 7 = 8$
$1 + 4 = 5$	$4 + 3 = 7$	$5 + 3 = 8$
$5 + 2 = 7$	$1 + 5 = 6$	$2 + 3 = 5$
$10 - 9 = 1$	$4 + 5 = 9$	$8 - 2 = 6$

Drill 8

$4 + 1 = 5$	$1 + 4 = 5$	$5 + 5 = 10$
$2 + 2 = 4$	$7 + 1 = 8$	$9 + 1 = 10$
$2 + 7 = 9$	$5 + 4 = 9$	$1 + 5 = 6$
$5 + 2 = 7$	$2 + 3 = 5$	$1 + 3 = 4$
$6 + 2 = 8$	$4 + 6 = 10$	$1 + 9 = 10$
$1 + 6 = 7$	$3 + 7 = 10$	$2 + 4 = 6$
$2 + 6 = 8$	$5 + 3 = 8$	$7 + 3 = 10$
$7 + 2 = 9$	$3 + 3 = 6$	$6 + 1 = 7$
$3 + 5 = 8$	$4 + 2 = 6$	$6 + 4 = 10$
$1 + 2 = 3$	$2 + 1 = 3$	$1 + 7 = 8$
$1 + 1 = 2$	$4 + 5 = 9$	$3 + 2 = 5$
$4 + 4 = 8$	$4 + 3 = 7$	$6 + 3 = 9$
$3 + 4 = 7$	$2 + 5 = 7$	$3 + 6 = 9$
$8 + 2 = 10$	$1 + 8 = 9$	$3 + 1 = 4$
$8 + 1 = 9$	$2 + 8 = 10$	$5 + 1 = 6$

Lesson 9

INTRODUCING PLACE VALUE

DIGITS

The numbers 0-9 are called digits. Count how many digits there are:

0 1 2 3 4 5 6 7 8 9

We use the ten digits to make numbers just like we use the 26 letters of the alphabet to make words.
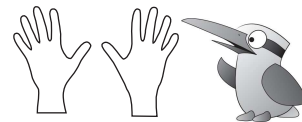
Did you know that fingers are also sometimes called digits? We have ten digits on our hands AND ten digits in our number system!

This year we will mostly be working with two and three-digit numbers.

LESSON PRACTICE

Here are some big and small numbers. Count the digits in each number and write the number of digits in the box.

645	3	60 147	5	1 259 776	7
60	2	54	2	7 699	4
3 215	4	350 148	6	5	1
8	1	900	9	8 326	4

REVIEW AND PRACTICE

There were five apples on the table before Sarah ate one. How many apples are on the table now?
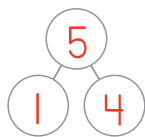
$$5 - 1 = 4$$

There are __4__ apples.

(number bond: 5 with 1 and 4)

Fill in the missing numbers on the number chart.

81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Write an addition or subtraction equation to describe each picture.

$$2 + 3 = 5$$

$$5 - 2 = 3$$

JUST FOR FUN

On the last page of this book you will find a tangram puzzle. See if you can make these pictures with it. You must use all the pieces for each one.

4 + 1 = 5	1 + 4 = 5	5 + 5 = 10
2 + 2 = 4	7 + 1 = 8	9 + 1 = 10
2 + 7 = 9	5 + 4 = 9	1 + 5 = 6
5 + 2 = 7	2 + 3 = 5	1 + 3 = 4
6 + 2 = 8	4 + 6 = 10	1 + 9 = 10
1 + 6 = 7	3 + 7 = 10	2 + 4 = 6
2 + 6 = 8	5 + 3 = 8	7 + 3 = 10
7 + 2 = 9	3 + 3 = 6	6 + 1 = 7
3 + 5 = 8	4 + 2 = 6	6 + 4 = 10
1 + 2 = 3	2 + 1 = 3	1 + 7 = 8
1 + 1 = 2	4 + 5 = 9	3 + 2 = 5
4 + 4 = 8	4 + 3 = 7	6 + 3 = 9
3 + 4 = 7	2 + 5 = 7	3 + 6 = 9
8 + 2 = 10	1 + 8 = 9	3 + 1 = 4
8 + 1 = 9	2 + 8 = 10	5 + 1 = 6

Lesson 10

REVIEW OF COUNTING BY TENS

Counting by tens is a very important skill that can help us understand and work with two digit numbers. Today we are going to practice counting by tens and see some uses for it.

Peter stacked his one dollar coins into groups of ten. Help him count how many dollars he has by writing the tens on each stack.

10 20 30 40 50 60 70 80 90 100
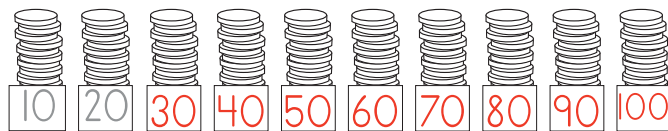
Ted has made his lego into towers of ten bricks. Help him count them.

10 20 30 40 50 60 70
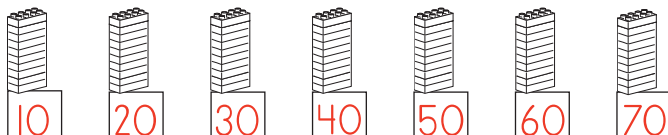
Mary is making bunches of flowers. She puts ten flowers in a bunch. Count the flowers.

10 20 30 40 50 60 70 80 90
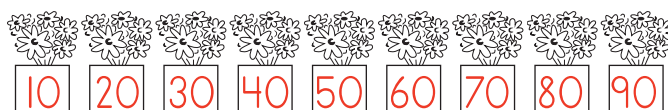
The sticks are in bundles of ten. Count the sticks.

10 20 30 40 50 60 70 80
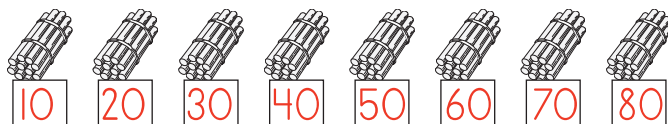
REVIEW AND PRACTICE

Emily got a box of eight crayons for her birthday. A few days later she lost the green one. How many crayons are left in Emily's box?
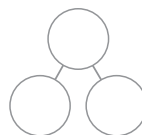
$$8 - 1 = 7$$

There are __7__ crayons left.

How many digits?

1,223: 4	24,678: 5	261,845: 6
28: 2	7,081: 4	419: 3
7,232: 4	411,826: 6	38: 2

Sam sorted his blocks by colour and made the following pictogram to show how many he had of each colour. Each picture of a brick equals 10 bricks. Use the pictogram to answer the questions below. (Optional: colour the bricks.)

= 10 blocks

red   blue   yellow   green   orange

How many green blocks does Sam have? __70__

How many red blocks does Sam have? __40__

Which colour block does Sam have the LEAST of? __orange__

Why not make your own pictogram? Pick a bunch of toys you can sort and get counting and drawing!

4 + 3 = 7	4 + 4 = 8	5 + 2 = 7
3 + 1 = 4	1 + 5 = 6	5 + 4 = 9
9 + 1 = 10	3 + 4 = 7	8 + 1 = 9
1 + 6 = 7	6 + 4 = 10	7 + 1 = 8
5 + 5 = 10	4 + 5 = 9	7 + 2 = 9
8 + 2 = 10	1 + 9 = 10	2 + 6 = 8
5 + 1 = 6	2 + 1 = 3	3 + 7 = 10
1 + 8 = 9	3 + 3 = 6	4 + 6 = 10
2 + 8 = 10	1 + 3 = 4	2 + 2 = 4
5 + 3 = 8	2 + 7 = 9	3 + 6 = 9
3 + 2 = 5	4 + 1 = 5	1 + 1 = 2
6 + 3 = 9	1 + 2 = 3	1 + 7 = 8
6 + 1 = 7	2 + 5 = 7	6 + 2 = 8
2 + 3 = 5	7 + 3 = 10	3 + 5 = 8
1 + 4 = 5	4 + 2 = 6	2 + 4 = 6

Lesson 11

COUNTING LOTS OF OBJECTS
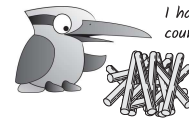
I have this pile of sticks that I need to count. Let's see how to make it easier.

I've bundled up the sticks into groups of ten and I have some left over. Now it is easy to count them!

10   20   30   40   41 42 43
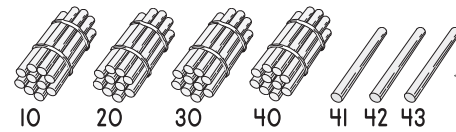
Did you notice that we need to count on from 40 to count the 'left overs'?

Practice this skill by finding a bunch of objects you can count like this. Some ideas: craft sticks, match sticks, pebbles, lego bricks, beads, origami squares...

Every stack/bundle of objects contains ten. Count them write the number in the box.

45

72

63

94
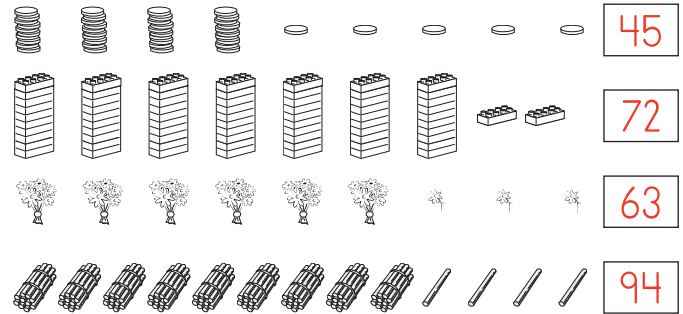
You might find this last one a bit tricky. It's the same as the rest, but in the last box we count each dot. You might need to use a pencil as a pointer!

57

REVIEW AND PRACTICE

Fill in the missing numbers on the number chart.

21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

Fill in the missing numbers.

10 / 2 8   6 / 1 5   8 / 5 3

Count the dots.

37

63

52
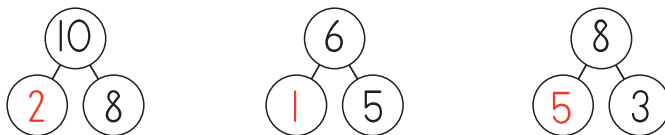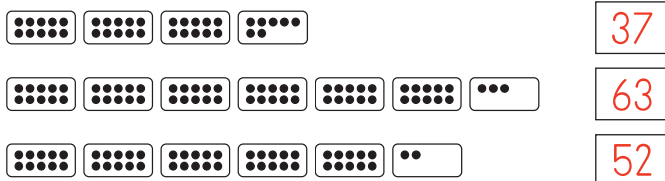
Calculate then colour the picture using the colour code:

green: 6
light blue: 7
red: 8
brown: 9
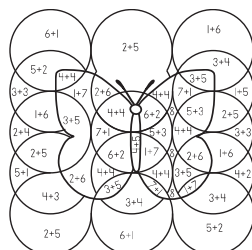
3 + 7 = 10	1 + 9 = 10	1 + 5 = 6
7 + 1 = 8	4 + 3 = 7	7 + 3 = 10
2 + 5 = 7	1 + 4 = 5	1 + 7 = 8
5 + 1 = 6	2 + 2 = 4	7 + 2 = 9
4 + 4 = 8	3 + 3 = 6	2 + 8 = 10
2 + 7 = 9	3 + 5 = 8	5 + 3 = 8
3 + 2 = 5	2 + 6 = 8	5 + 5 = 10
3 + 1 = 4	4 + 6 = 10	3 + 4 = 7
9 + 1 = 10	1 + 3 = 4	2 + 3 = 5
1 + 1 = 2	2 + 4 = 6	3 + 6 = 9
8 + 2 = 10	1 + 6 = 7	5 + 4 = 9
1 + 2 = 3	4 + 2 = 6	6 + 4 = 10
6 + 3 = 9	6 + 1 = 7	4 + 5 = 9
5 + 2 = 7	2 + 1 = 3	1 + 8 = 9
6 + 2 = 8	4 + 1 = 5	8 + 1 = 9

Lesson 12

READING NUMBERS

A lot of kids get numbers that have a one in them mixed up. For example:

<div align="center">12   21</div>

Do you know which number is twelve and which one is twenty one. Do you get them mixed up sometimes? If you get these right every time, good job! This lesson will be super easy for you (and you may ask your parent if you can skip it!) If you do get them mixed up a bit, don't worry, I hope I can help fix that today.

The problem is that the names for the numbers between 10 and 20 are backwards! Let's take take the number sixteen as an example; we'll break the word up into its syllables:

16 six-teen

You know what "six" means, but do you know what "teen" means? It's an old-fashioned word for "ten" so the word "sixteen" means six and ten. So the names for the numbers from thirteen to nineteen are just like sums but this is not very helpful because it breaks the pattern that most numbers fit into. To see why, let's look at what sixty-one means:

61 six-ty-one

The "ty" means "tens" so sixty means "six tens" and "sixty-one" just means "six tens and one." From last lesson you should now understand why sixty-one is called sixty-one: it is just six bundles of ten and one more!

Now, if the numbers between 10 and 20 followed the same pattern as the rest of the numbers to 100, they would sound like this: onety-one; onety-two; onety-three; onety-four; onety-five; onety-six; onety-seven; onety-eight; onety-nine and you'd never get confused. Unfortunately, English is not so logical.

But hopefully you can now decide what a number containing a "1" is by trying out the name "onety-..." on it to see if it fits. Remember, for "onety" to fit, the one needs to come first.

LESSON PRACTICE

Use highlighters or pencils to colour over the name and the corresponding number with the same colour.

31	thirteen	thirty-one	13
19	ninty-one	nineteen	91
16	sixteen	sixty-one	61
21	twenty-one	twelve	12

Frank went to the garden and found four big ears of corn and five little ears of corn. How many ears of corn did he find all together?
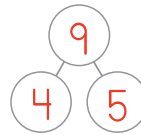
$$4 + 5 = 9$$

Frank found __9__ ears of corn.

Find the fractions (use Sumstix if you need them)

$\frac{1}{2}$ of 8 = __4__ $\frac{1}{2}$ of 14 = __7__ $\frac{1}{4}$ of 20 = __5__

$\frac{1}{2}$ of 10 = __5__ $\frac{1}{2}$ of 12 = __6__ $\frac{1}{4}$ of 4 = __1__

$\frac{1}{2}$ of 16 = __8__ $\frac{1}{2}$ of 20 = __10__ $\frac{1}{2}$ of 2 = __1__

Fill in the missing numbers on the number chart.

41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60

Match the number to its name.

twenty-one   twelve   fourteen   forty-one   sixty-one   sixteen

12   17   21   71   14   18   81   41   51   15   16   61

seventeen   seventy-one   eighty-one   eighteen   fifteen   fifty-one

---

3 + 7 = 10	1 + 4 = 5	1 + 5 = 6
1 + 8 = 9	7 + 2 = 9	3 + 5 = 8
3 + 1 = 4	6 + 2 = 8	8 + 2 = 10
7 + 1 = 8	3 + 3 = 6	2 + 6 = 8
5 + 5 = 10	2 + 2 = 4	4 + 5 = 9
4 + 1 = 5	2 + 1 = 3	9 + 1 = 10
5 + 2 = 7	6 + 3 = 9	5 + 4 = 9
3 + 6 = 9	3 + 2 = 5	4 + 2 = 6
5 + 1 = 6	1 + 7 = 8	2 + 3 = 5
1 + 1 = 2	4 + 6 = 10	1 + 3 = 4
7 + 3 = 10	4 + 4 = 8	5 + 3 = 8
1 + 9 = 10	2 + 4 = 6	2 + 7 = 9
4 + 3 = 7	2 + 8 = 10	1 + 6 = 7
6 + 4 = 10	8 + 1 = 9	6 + 1 = 7
3 + 4 = 7	1 + 2 = 3	2 + 5 = 7

Lesson 13

TWO DIGIT NUMBERS WITH SUMSTIX

Just like we used bundles of ten to make counting a lot of objects easier, we can use the orange Sumstix to make big numbers easily.

REVIEW
Count the objects. Each group has ten objects.

31

13

72

27
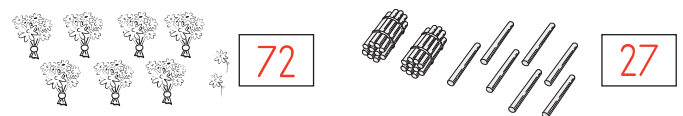
 Did you notice? The first digit in all of the numbers above tells us how many piles or bunches (groups of ten) we have and the second digit tells us how many 'left over' objects we have.

42

first digit   second digit

We can use this information to make any two digit number with Sumstix. The first digit will be the number of orange (10) sticks that we need and the second digit will give us the colour of the other stick.

EXAMPLE
Make the number 42 with Sumstix.

42
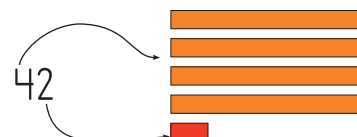
LESSON PRACTICE
Make each number with Sumstix then draw the Sumstix pattern.

31

64

25

40

Write the number represented by each Sumstix pattern.

57

83

40

28

REVIEW AND PRACTICE
Write an equation to describe each picture below.

$$5 - 2 = 3$$

$$8 - 3 = 5$$

Match the number to its name.

eighty-one twelve seventy-one forty-one fifty-one sixteen

12 81 21 15 14 18 17 61 51 71 16 41

seventeen twenty-one fourteen eighteen fifteen sixty-one

Fill in the missing numbers on the number chart.

61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80

Draw the Sumstix pattern

Write the number

42

36

Drill 13

6 - 2 = 4	10 - 8 = 2	8 - 1 = 7
10 - 2 = 8	9 - 4 = 5	8 - 4 = 4
6 - 1 = 5	5 - 4 = 1	5 - 2 = 3
7 - 1 = 6	10 - 4 = 6	7 - 2 = 5
2 - 1 = 1	10 - 6 = 4	7 - 4 = 3
6 - 4 = 2	7 - 5 = 2	9 - 3 = 6
9 - 1 = 8	9 - 5 = 4	5 - 3 = 2
10 - 9 = 1	8 - 6 = 2	9 - 6 = 3
8 - 5 = 3	7 - 3 = 4	10 - 1 = 9
10 - 5 = 5	4 - 3 = 1	9 - 8 = 1
8 - 7 = 1	8 - 2 = 6	6 - 5 = 1
7 - 6 = 1	3 - 2 = 1	3 - 1 = 2
4 - 2 = 2	4 - 1 = 3	5 - 1 = 4
9 - 7 = 2	10 - 7 = 3	9 - 2 = 7
10 - 3 = 7	6 - 3 = 3	8 - 3 = 5

Lesson 14

EXPANDED FORM

When we use Sumstix to make two-digit numbers, we can make a big long train with them like this:

But do you remember what a train represents? Yes, it can represent a sum. So for the train above, we could write the sum:

$$10 + 10 + 10 + 4 = 34$$

Now, let's break the train into two parts and write a sum about them:

$$30 + 4 = 34$$

We call the sum 30+4 the **expanded form** of the number 34. Next term we'll see how to use expanded form to make adding numbers really easy.

EXAMPLE
Write the number 68 in expanded form.

$$68 = 60 + 8$$

LESSON PRACTICE
Write the numbers in expanded form.

52 = 50 + 2

63 = 60 + 3

49 = 40 + 9

36 = 30 + 6

74 = 70 + 4

21 = 20 + 1

Harry is five years old. His brother is four years older than him. How old is Harry's brother?
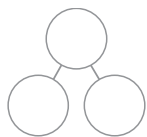
$$5 + 4 = 9$$

Harry's brother is ___9___ years old.

Find the fractions (use Sumstix if you need them)

$\frac{1}{2}$ of 12 = ___6___ $\frac{1}{2}$ of 4 = ___2___ $\frac{1}{2}$ of 10 = ___5___

$\frac{1}{2}$ of 2 = ___1___ $\frac{1}{4}$ of 8 = ___2___ $\frac{1}{4}$ of 16 = ___4___

$\frac{1}{2}$ of 14 = ___7___ $\frac{1}{4}$ of 12 = ___3___ $\frac{1}{2}$ of 8 = ___4___

Fill in the missing numbers on the number chart.

81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Write the numbers in expanded form.

81 = ___80 + 1___   95 = ___90 + 5___

59 = ___50 + 9___   18 = ___10 + 8___

64 = ___60 + 4___   46 = ___40 + 6___

---

7 - 1 = 6	3 - 2 = 1	4 - 2 = 2
7 - 2 = 5	7 - 4 = 3	6 - 3 = 3
5 - 4 = 1	4 - 1 = 3	6 - 1 = 5
8 - 2 = 6	10 - 1 = 9	5 - 3 = 2
7 - 6 = 1	4 - 3 = 1	10 - 8 = 2
9 - 8 = 1	9 - 2 = 7	10 - 5 = 5
10 - 4 = 6	6 - 2 = 4	9 - 5 = 4
9 - 7 = 2	9 - 4 = 5	8 - 3 = 5
10 - 3 = 7	9 - 3 = 6	8 - 6 = 2
7 - 3 = 4	10 - 7 = 3	5 - 1 = 4
3 - 1 = 2	8 - 4 = 4	9 - 1 = 8
2 - 1 = 1	5 - 2 = 3	8 - 1 = 7
8 - 5 = 3	9 - 6 = 3	7 - 5 = 2
6 - 5 = 1	10 - 9 = 1	10 - 6 = 4
8 - 7 = 1	6 - 4 = 2	10 - 2 = 8

Lesson 15

PLACE VALUE

Another way to make working with two or three digit numbers easier is to use a place value chart.

The first digit tells us how many tens (orange sticks) we need to make the number.

64

The second digit tells us which Sumstix to use for the 'left overs.'

We can show this same information on a place value chart.

The 't' stands for 'tens.' (The number of orange sticks)

t | o
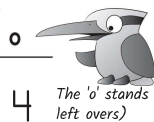
The 'o' stands for 'ones.' (or left overs)

6 | 4

LESSON PRACTICE

Write the following numbers on the place value charts.

36
t	o
3	6

23
t	o
2	3

80
t	o
8	0

95
t	o
9	5

64
t	o
6	4

72
t	o
7	2

Write the numbers in expanded form.

76 = ___70 + 6___   67 = ___60 + 7___

18 = ___10 + 8___   81 = ___80 + 1___

Fill in the missing numbers on the number chart.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Write the following numbers on the place value charts.

42
t	o
4	2

24
t	o
2	4

Count the dots.

53
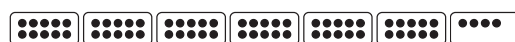
64

12

Drill 15

9 − 5 = 4	3 − 2 = 1	7 − 6 = 1
9 − 4 = 5	4 − 2 = 2	9 − 6 = 3
10 − 4 = 6	6 − 2 = 4	8 − 5 = 3
5 − 3 = 2	7 − 1 = 6	5 − 4 = 1
9 − 7 = 2	8 − 6 = 2	10 − 3 = 7
9 − 8 = 1	10 − 8 = 2	6 − 5 = 1
6 − 4 = 2	2 − 1 = 1	10 − 2 = 8
7 − 2 = 5	7 − 5 = 2	10 − 1 = 9
9 − 3 = 6	8 − 2 = 6	10 − 7 = 3
8 − 7 = 1	7 − 3 = 4	6 − 3 = 3
4 − 3 = 1	8 − 4 = 4	8 − 1 = 7
8 − 3 = 5	9 − 1 = 8	5 − 2 = 3
4 − 1 = 3	7 − 4 = 3	10 − 5 = 5
5 − 1 = 4	3 − 1 = 2	10 − 9 = 1
10 − 6 = 4	9 − 2 = 7	6 − 1 = 5

Lesson 16

CHECKPOINT TWO
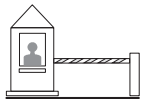
How many digits are there in each number?

762 → 3   8 → 1   13 → 2

Count the dots.
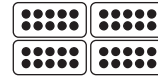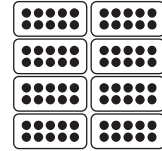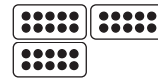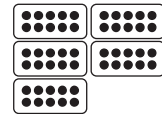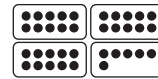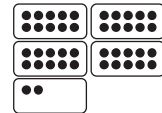
40	80
30	50
36	42

Write the numbers

fifty-four → 44   thirty-one → 31

fourty-six → 46   thirteen → 13

Write the numbers represented by the Sumstix
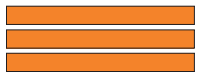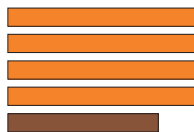
30   48

Write the numbers in expanded form.

58 = 50 + 8   77 = 70 + 7

46 = 40 + 6   15 = 10 + 5

32 = 30 + 2   69 = 60 + 9

Write the following numbers on the place value charts.

	t	o
56	5	6

	t	o
29	2	9

Drill 16

8 − 4 = 4	4 − 3 = 1	6 − 5 = 1
10 − 1 = 9	5 − 4 = 1	8 − 1 = 7
10 − 3 = 7	6 − 2 = 4	8 − 2 = 6
9 − 2 = 7	7 − 4 = 3	10 − 2 = 8
6 − 4 = 2	9 − 7 = 2	10 − 8 = 2
3 − 2 = 1	8 − 6 = 2	7 − 3 = 4
6 − 3 = 3	8 − 7 = 1	10 − 7 = 3
10 − 6 = 4	5 − 3 = 2	8 − 5 = 3
8 − 3 = 5	9 − 5 = 4	5 − 2 = 3
9 − 4 = 5	6 − 1 = 5	5 − 1 = 4
10 − 4 = 6	3 − 1 = 2	7 − 5 = 2
7 − 2 = 5	4 − 2 = 2	4 − 1 = 3
9 − 8 = 1	2 − 1 = 1	7 − 1 = 6
7 − 6 = 1	10 − 5 = 5	9 − 1 = 8
9 − 6 = 3	9 − 3 = 6	10 − 9 = 1

Lesson 17

ADDING NUMBERS WITH TOTALS OVER TEN

INVESTIGATION

Count the coins in each group.
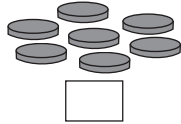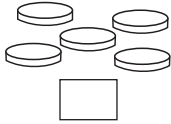
If we want to know the total number of coins, we can write a sum:

$$5 + 7 = \underline{\qquad}$$

To find the answer, we can count the coins by making a pile of ten coins:

$$5 + 7 = \underline{12}$$

Grab 20 small objects that you can use to help you with the lesson practice. Anything small that will sit still on the desk will do: it could be small toys, pebbles, dry beans, raw pasta shapes, coins, tokens/counters/pawns from a game or even "white" Sumstix. You don't even need two colours, I just used the colour in the example to make it clear what I was doing.

LESSON PRACTICE

Divide your objects into groups and then bundle them in tens to help solve the additions:

$8 + 9 = \underline{17}$	$8 + 8 = \underline{16}$	$8 + 4 = \underline{12}$
$3 + 9 = \underline{12}$	$9 + 7 = \underline{16}$	$4 + 9 = \underline{13}$
$7 + 7 = \underline{14}$	$6 + 6 = \underline{12}$	$8 + 6 = \underline{14}$
$6 + 8 = \underline{14}$	$8 + 3 = \underline{11}$	$5 + 8 = \underline{13}$

Emma has seven dolls. She gives two of them to a girl that doesn't have any. How many dolls does Emma have left?
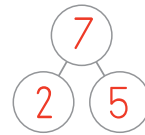
$$7 - 2 = 5$$

Emma has $\underline{5}$ dolls left.

Find the fractions (use Sumstix if you need them)

$\frac{1}{2}$ of 10 = $\underline{5}$	$\frac{1}{2}$ of 8 = $\underline{4}$	$\frac{1}{4}$ of 16 = $\underline{4}$
$\frac{1}{2}$ of 14 = $\underline{7}$	$\frac{1}{4}$ of 4 = $\underline{1}$	$\frac{1}{2}$ of 18 = $\underline{9}$
$\frac{1}{4}$ of 20 = $\underline{5}$	$\frac{1}{2}$ of 4 = $\underline{2}$	$\frac{1}{2}$ of 2 = $\underline{1}$

Fill in the missing numbers on the number chart.

21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

Write a sum to describe the picture below and solve it.
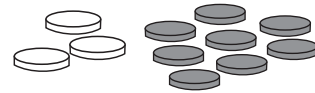
$$\underline{3} + \underline{8} = 10 + \underline{1} = \underline{11}$$

Drill 17

$4 + 4 = \underline{8}$	$1 + 3 = \underline{4}$	$1 + 5 = \underline{6}$
$9 + 1 = \underline{10}$	$1 + 4 = \underline{5}$	$7 + 1 = \underline{8}$
$7 + 3 = \underline{10}$	$4 + 2 = \underline{6}$	$6 + 2 = \underline{8}$
$7 + 2 = \underline{9}$	$3 + 4 = \underline{7}$	$8 + 2 = \underline{10}$
$2 + 4 = \underline{6}$	$2 + 7 = \underline{9}$	$2 + 8 = \underline{10}$
$1 + 2 = \underline{3}$	$2 + 6 = \underline{8}$	$4 + 3 = \underline{7}$
$3 + 3 = \underline{6}$	$1 + 7 = \underline{8}$	$3 + 7 = \underline{10}$
$4 + 6 = \underline{10}$	$2 + 3 = \underline{5}$	$3 + 5 = \underline{8}$
$5 + 3 = \underline{8}$	$4 + 5 = \underline{9}$	$3 + 2 = \underline{5}$
$5 + 4 = \underline{9}$	$5 + 1 = \underline{6}$	$4 + 1 = \underline{5}$
$6 + 4 = \underline{10}$	$2 + 1 = \underline{3}$	$2 + 5 = \underline{7}$
$5 + 2 = \underline{7}$	$2 + 2 = \underline{4}$	$3 + 1 = \underline{4}$
$1 + 8 = \underline{9}$	$1 + 1 = \underline{2}$	$6 + 1 = \underline{7}$
$1 + 6 = \underline{7}$	$5 + 5 = \underline{10}$	$8 + 1 = \underline{9}$
$3 + 6 = \underline{9}$	$6 + 3 = \underline{9}$	$1 + 9 = \underline{10}$

Lesson 18

SUMS WITH ANSWERS OVER 10

Last lesson we grouped objects to help us calculate sums with answers bigger than ten. Today we will do the same thing using Sumstix.

EXAMPLE

$$5 + 9 = \underline{\qquad}$$

Step 1: Build a Sumstix train:

Step 2: Find the answer.

This is a LONG train, so we know the answer will start with a ten.

Finding this stick is a bit like solving a missing number problem!

$$5 + 9 = \underline{14}$$

LESSON PRACTICE

Use Sumstix to find the answers to the following sums.

$8 + 9 = \underline{17}$	$5 + 9 = \underline{14}$	$7 + 6 = \underline{13}$
$8 + 8 = \underline{16}$	$7 + 8 = \underline{15}$	$6 + 6 = \underline{12}$
$4 + 8 = \underline{12}$	$6 + 7 = \underline{13}$	$9 + 5 = \underline{14}$
$9 + 7 = \underline{16}$	$4 + 9 = \underline{13}$	$9 + 9 = \underline{18}$
$6 + 9 = \underline{15}$	$6 + 4 = \underline{10}$	$8 + 3 = \underline{11}$

REVIEW AND PRACTICE

Jake made ten paper planes then went outside to test them. It was a windy day and some of the planes got carried off far away and lost. Jake had only six paper planes left when he came back inside. How many paper planes were lost?
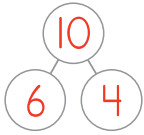
10 − 6 = 4

Jake lost __4__ paper planes.

Write the following numbers on the place value charts.
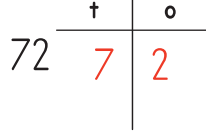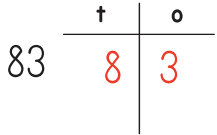
	t	o
83	8	3

	t	o
72	7	2

Fill in the missing numbers on the number chart.

41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60

Write the equations represented by the number bond.
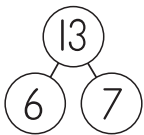
13 → 6, 7

6 + 7 = 13   13 − 6 = 7
7 + 6 = 13   13 − 7 = 6

Drill 18

3 + 5 = 8	3 + 1 = 4	1 + 7 = 8
7 + 3 = 10	9 + 1 = 10	4 + 3 = 7
3 + 7 = 10	1 + 1 = 2	7 + 2 = 9
1 + 3 = 4	4 + 1 = 5	5 + 2 = 7
2 + 7 = 9	2 + 6 = 8	5 + 4 = 9
3 + 2 = 5	6 + 3 = 9	2 + 3 = 5
5 + 1 = 6	8 + 2 = 10	6 + 4 = 10
6 + 1 = 7	4 + 4 = 8	6 + 2 = 8
1 + 6 = 7	3 + 3 = 6	7 + 1 = 8
2 + 1 = 3	3 + 6 = 9	4 + 2 = 6
1 + 4 = 5	1 + 2 = 3	4 + 6 = 10
2 + 2 = 4	5 + 5 = 10	1 + 8 = 9
2 + 5 = 7	5 + 3 = 8	1 + 9 = 10
3 + 4 = 7	2 + 4 = 6	1 + 5 = 6
4 + 5 = 9	8 + 1 = 9	2 + 8 = 10

Lesson 19

NUMBER BONDS FOR NUMBERS BIGGER THAN 10

Last year we spent a lot of time learning about number bonds for numbers up to ten. This year we are going to learn the number bonds for numbers to 20.

EXAMPLE

(number bond: 5, 8)
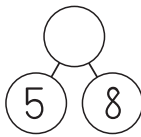
Step 1: Make a Sumstix train.

Step 2: Find the total.

This is just like last lesson.

13 → 5, 8

LESSON PRACTICE
Use Sumstix to find the missing totals.

11 → 7, 4

15 → 9, 6

12 → 8, 4

16 → 9, 7

14 → 5, 9

12 → 7, 5
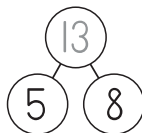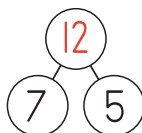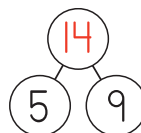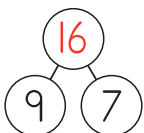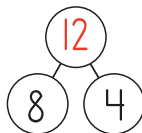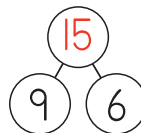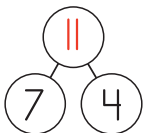
REVIEW AND PRACTICE

Kylie's grandma gave her ten dollars for her birthday. She bought a pencil for one dollar and a notebook for three dollars then she put the rest of the money in the bank. How much money did Kylie put in the bank?

4 → 1, 3   10 → 4, 6
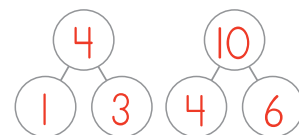
1 + 3 = 4
10 − 4 = 6

Kylie put __6__ dollars in the bank.

Count the dots.

15

51

30

Fill in the missing numbers on the number chart.

61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80

Fill in the missing number and write the four equations the number bond represents.
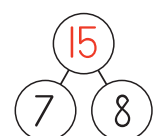
15 → 7, 8

7 + 8 = 15   8 + 7 = 15
15 − 7 = 8   15 − 8 = 7

Drill 19

5 + 2 = 7	6 + 1 = 7	2 + 1 = 3
1 + 2 = 3	1 + 7 = 8	5 + 4 = 9
1 + 6 = 7	9 + 1 = 10	4 + 4 = 8
3 + 5 = 8	5 + 5 = 10	1 + 1 = 2
2 + 8 = 10	7 + 3 = 10	4 + 1 = 5
5 + 3 = 8	7 + 2 = 9	1 + 4 = 5
8 + 1 = 9	4 + 5 = 9	3 + 2 = 5
3 + 7 = 10	3 + 4 = 7	6 + 3 = 9
1 + 9 = 10	4 + 3 = 7	7 + 1 = 8
6 + 4 = 10	2 + 3 = 5	2 + 2 = 4
4 + 6 = 10	1 + 5 = 6	3 + 1 = 4
1 + 8 = 9	2 + 4 = 6	8 + 2 = 10
6 + 2 = 8	1 + 3 = 4	5 + 1 = 6
3 + 6 = 9	2 + 5 = 7	3 + 3 = 6
2 + 7 = 9	4 + 2 = 6	2 + 6 = 8

Lesson 20
MISSING NUMBER PROBLEMS FOR TOTALS GREATER THAN TEN

EXAMPLE

Find the missing number:

$$7 + \underline{} = 12$$
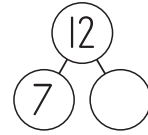
Step 1: Build the total.

Step 2: Place the known part next to the total.

Step 3: Find the stick that fills in the gap.

$$7 + \underline{5} = 12$$
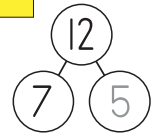
The method is the same whether it is the first or second number that is missing.

LESSON PRACTICE

5 + 6 = 11	6 + 6 = 12	4 + 9 = 13
9 + 9 = 18	6 + 7 = 13	3 + 8 = 11
9 + 6 = 15	5 + 8 = 13	3 + 9 = 12

REVIEW AND PRACTICE

Leon is planting seeds for his mother. His mother gave him 17 seeds and he has planted 9. How many seeds does Leon have left to plant?

17
9 8
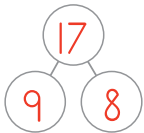
$$9 + 8 = 17$$

Leon has 8 seeds left to plant.

Write the numbers in expanded form.

20 = 20 + 0   27 = 20 + 7

46 = 40 + 6   76 = 70 + 6

Fill in the missing numbers on the number chart.

81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Fill in the missing number and write the four equations the number bond represents.

16
7 9
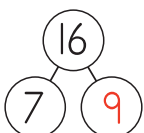
$$7 + 9 = 16 \qquad 16 - 7 = 9$$
$$9 + 7 = 16 \qquad 16 - 9 = 7$$

Drill 20

2 + 8 = 10	3 + 3 = 6	6 + 3 = 9
4 + 6 = 10	1 + 9 = 10	1 + 6 = 7
7 + 2 = 9	4 + 2 = 6	1 + 1 = 2
5 + 5 = 10	6 + 2 = 8	7 + 3 = 10
4 + 3 = 7	1 + 7 = 8	6 + 4 = 10
5 + 4 = 9	3 + 6 = 9	4 + 5 = 9
2 + 1 = 3	4 + 4 = 8	2 + 7 = 9
1 + 4 = 5	8 + 2 = 10	2 + 2 = 4
9 + 1 = 10	8 + 1 = 9	5 + 3 = 8
3 + 1 = 4	1 + 5 = 6	3 + 7 = 10
2 + 6 = 8	2 + 3 = 5	2 + 5 = 7
3 + 4 = 7	3 + 2 = 5	5 + 1 = 6
1 + 2 = 3	1 + 3 = 4	3 + 5 = 8
7 + 1 = 8	6 + 1 = 7	1 + 8 = 9
4 + 1 = 5	5 + 2 = 7	2 + 4 = 6

Lesson 21

SUBTRACTION WITH NUMBER BONDS

EXAMPLE

15 - 7 = _____

Step 1: Fill in a number bond with the numbers from the problem.

15
7 ○
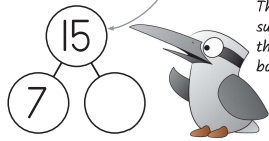
The first number in a subtraction is always the total in a number bond.

Step 2: Use Sumstix to find the missing number. (See last lesson.)

15
7 8
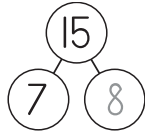
15 - 7 = __8__

LESSON PRACTICE

12 - 7 = __5__   14 - 9 = __5__   11 - 6 = __5__

14 - 5 = __9__   18 - 9 = __9__   14 - 7 = __7__

11 - 4 = __7__   11 - 7 = __4__   13 - 9 = __4__

13 - 4 = __9__   17 - 8 = __9__   12 - 6 = __6__

Oliver built a toy train track with 15 sections, Seven sections were curves and the rest were straight. How many straight sections of track did Oliver use to build his track?

15
7 8
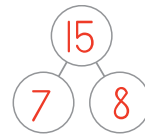
15 - 7 = 8

Oliver used __8__ straight sections.

Fill in the missing numbers on the number chart.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Fill in the missing number and write the four equations the number bond represents.

18
9 9
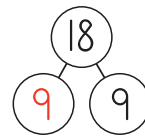
9 + 9 = 18   18 - 9 = 9

Count the dots.

[■■■■■] [■■■■■] [■■■]   23

[■■■■■] [■■■■■] [■■■■■] [■]   31

[■■■■■] [■■■■■] [■■■■■] [■■■■■] [■■■■■]   50

Drill 21

10 - 9 = __1__   9 - 3 = __6__   8 - 7 = __1__

4 - 1 = __3__   3 - 1 = __2__   8 - 3 = __5__

10 - 3 = __7__   7 - 5 = __2__   10 - 8 = __2__

10 - 2 = __8__   6 - 5 = __1__   10 - 1 = __9__

8 - 5 = __3__   7 - 1 = __6__   10 - 4 = __6__

9 - 7 = __2__   2 - 1 = __1__   9 - 2 = __7__

5 - 2 = __3__   7 - 2 = __5__   9 - 8 = __1__

4 - 3 = __1__   6 - 2 = __4__   6 - 1 = __5__

6 - 4 = __2__   9 - 5 = __4__   5 - 1 = __4__

8 - 4 = __4__   7 - 3 = __4__   7 - 4 = __3__

5 - 3 = __2__   10 - 7 = __3__   6 - 3 = __3__

10 - 5 = __5__   3 - 2 = __1__   4 - 2 = __2__

8 - 1 = __7__   9 - 6 = __3__   8 - 6 = __2__

8 - 2 = __6__   10 - 6 = __4__   9 - 4 = __5__

5 - 4 = __1__   9 - 1 = __8__   7 - 6 = __1__

Lesson 22

NUMBER RAINBOWS AND BONDS FOR BIG NUMBERS

We can use number rainbows and number bonds to explore numbers. One thing we can find out is what are all the combinations of two numbers that can make up a particular number.

EXAMPLE

Draw a number rainbow for the number 14 then draw all the number bonds to match.

Step 1: Write the numbers 0 to 14 in a line and join them using rainbow lines.

0 1 2 3 4 5 6 7 8 9 10 11 12 13 14
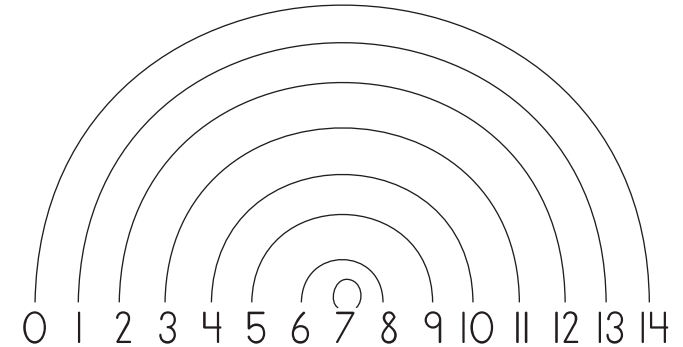
Step 2: Draw the corresponding number bonds.

14   14   14
3 11   4 10   5 9

14   14
6 8   7 7
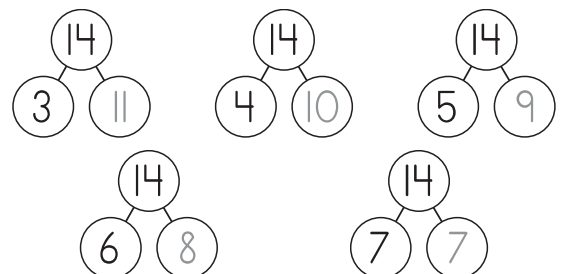
Draw a number rainbow for the number 12 then find all the number bonds to match.
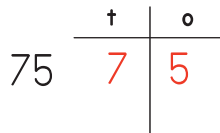
Miss Polly has seven healthy dollies and five sick dollies. How many dollies does Miss Polly have all together?
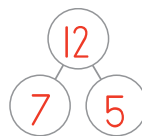
7 + 5 = 12

Miss Polly has __12__ dollies.

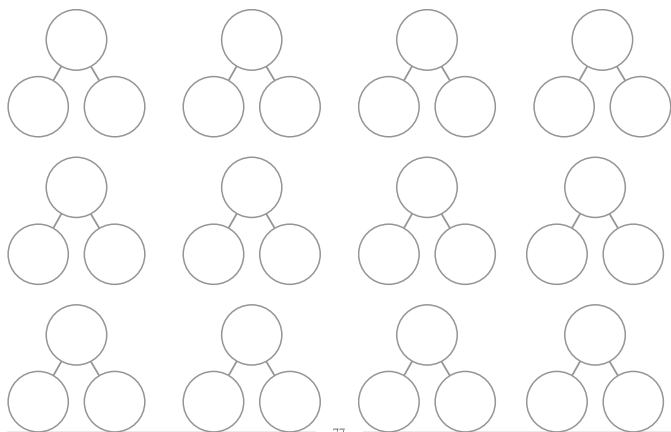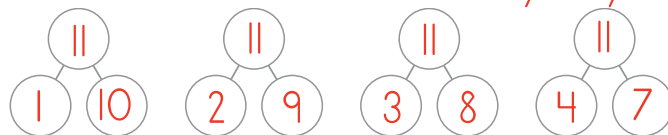Write the following numbers on the place value charts.
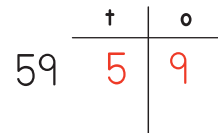
	t	o			t	o
75	7	5		59	5	9

Fill in the missing numbers on the number chart.

21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

Find four number bonds for the number 11. Draw a number rainbow on another piece of paper if you'd like for help.

Answer may vary

11 → 1, 10
11 → 2, 9
11 → 3, 8
11 → 4, 7

Drill 22

3 - 1 = 2	5 - 2 = 3	8 - 4 = 4
10 - 9 = 1	9 - 4 = 5	9 - 7 = 2
10 - 3 = 7	8 - 2 = 6	5 - 3 = 2
10 - 8 = 2	8 - 6 = 2	4 - 3 = 1
10 - 2 = 8	7 - 6 = 1	8 - 3 = 5
9 - 2 = 7	9 - 1 = 8	9 - 5 = 4
4 - 1 = 3	8 - 1 = 7	10 - 5 = 5
7 - 3 = 4	6 - 2 = 4	7 - 1 = 6
5 - 1 = 4	3 - 2 = 1	10 - 7 = 3
9 - 6 = 3	6 - 3 = 3	10 - 6 = 4
10 - 1 = 9	6 - 4 = 2	10 - 4 = 6
2 - 1 = 1	6 - 5 = 1	8 - 5 = 3
7 - 2 = 5	6 - 1 = 5	4 - 2 = 2
9 - 3 = 6	7 - 5 = 2	9 - 8 = 1
5 - 4 = 1	8 - 7 = 1	7 - 4 = 3

Lesson 23

MISSING NUMBERS IN SUBTRACTION

Just like we can have missing numbers in an addition problem, we can have missing numbers in a subtraction problem. It's a bit trickier to solve these but if you remember where the numbers go in a number bond or a Sumstix pattern, you'll be fine!

EXAMPLES

10 → ( ), 3

10 - ____ = 3
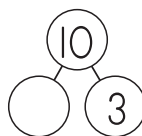
4 → ( ), 3
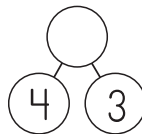
____ - 4 = 3

LESSON PRACTICE

Fill in the number bond to match the subtraction problem then find the missing number.

12 - **5** = 7
12 → ( ), 7
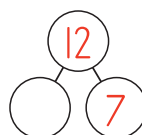
11 - 4 = 7
11 → 4, 7

11 - **3** = 8
11 → 8, ( )

13 - 4 = 9
13 → 4, 9
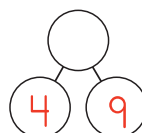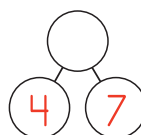
15 - **7** = 8
15 → 8, ( )
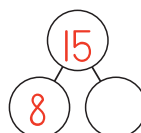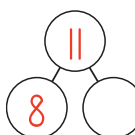
14 - 9 = 5
14 → 9, 5
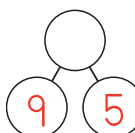
The grand old Duke of York asked 15 thousand men to march in his birthday parade. Four thousand men refused. How many thousand men marched for the duke?
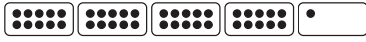
15
4
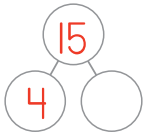
15 – 4 = 9
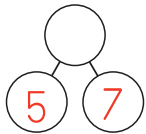
9 thousand men marched for the duke.

Count the dots.

| ::::: ::::: ::: | | 23 |

| ::::: ::::: ::::: ::::: ::::: ::::: | | 60 |

| ::::: ::::: ::::: ::::: · | | 41 |

Fill in the missing numbers on the number chart.

41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60

Fill in the number bond to match the equation. Find the missing number and then write the four equations represented by the number bond.

_____ – 5 = 7

5   7

5 + 7 = 12   7 + 5 = 12
12 – 5 = 7   12 – 7 = 5

81

---

7 – 4 = 3	9 – 1 = 8	9 – 4 = 5
10 – 7 = 3	6 – 1 = 5	6 – 2 = 4
9 – 7 = 2	8 – 5 = 3	4 – 3 = 1
6 – 4 = 2	8 – 2 = 6	10 – 8 = 2
9 – 6 = 3	8 – 7 = 1	5 – 1 = 4
8 – 4 = 4	8 – 6 = 2	7 – 2 = 5
2 – 1 = 1	9 – 8 = 1	7 – 5 = 2
5 – 2 = 3	3 – 1 = 2	10 – 4 = 6
8 – 3 = 5	10 – 3 = 7	10 – 9 = 1
4 – 2 = 2	8 – 1 = 7	9 – 5 = 4
5 – 4 = 1	10 – 5 = 5	10 – 6 = 4
6 – 5 = 1	7 – 1 = 6	10 – 2 = 8
7 – 3 = 4	6 – 3 = 3	10 – 1 = 9
9 – 3 = 6	7 – 6 = 1	3 – 2 = 1
5 – 3 = 2	4 – 1 = 3	9 – 2 = 7

82

Lesson 24

Checkpoint 3

Find the missing numbers.

11
6   5

16
6   10

13
4   9

13
5   8

12
7   5

13
6   7

12
6   6

11
9   2

14
9   5
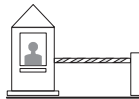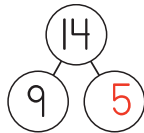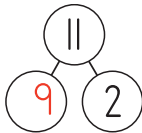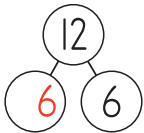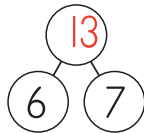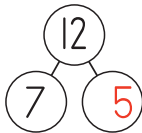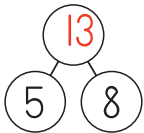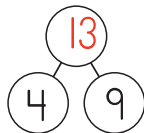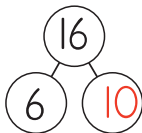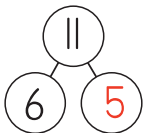
3 + 9 = 12   7 + 9 = 16   9 + 7 = 16

8 + 7 = 15   8 + 8 = 16   8 + 3 = 11

7 + 3 = 10   7 + 8 = 15   9 + 3 = 12
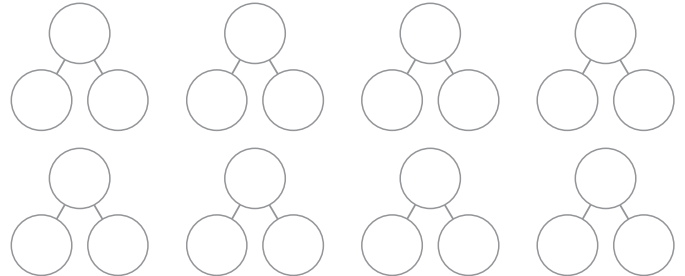
9 + 6 = 15   8 + 9 = 17   6 + 8 = 14

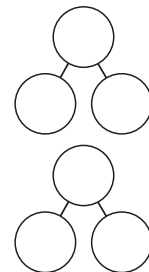8 + 4 = 12   4 + 8 = 12   7 + 4 = 11

83

Draw the number rainbow for 13 then make the number bonds to match.

Choose two number bonds that you wrote above and copy them below. Then write the four equations represented by each number bond.

84

Drill 24

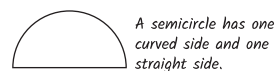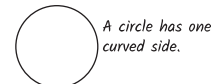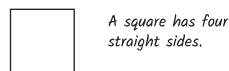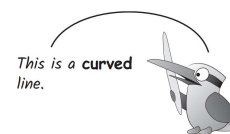|		
5 − 3 = 2	10 − 1 = 9	10 − 5 = 5
5 − 2 = 3	3 − 1 = 2	6 − 2 = 4
3 − 2 = 1	9 − 1 = 8	10 − 7 = 3
9 − 4 = 5	9 − 2 = 7	10 − 6 = 4
8 − 1 = 7	6 − 1 = 5	7 − 5 = 2
8 − 6 = 2	9 − 3 = 6	10 − 2 = 8
8 − 4 = 4	4 − 1 = 3	7 − 3 = 4
10 − 9 = 1	8 − 7 = 1	9 − 6 = 3
4 − 3 = 1	10 − 4 = 6	5 − 4 = 1
6 − 5 = 1	8 − 2 = 6	9 − 5 = 4
7 − 6 = 1	9 − 8 = 1	6 − 3 = 3
7 − 1 = 6	6 − 4 = 2	5 − 1 = 4
10 − 3 = 7	10 − 8 = 2	9 − 7 = 2
8 − 3 = 5	7 − 2 = 5	8 − 5 = 3
7 − 4 = 3	2 − 1 = 1	4 − 2 = 2

Lesson 25
DESCRIBING SHAPES
CURVED AND STRAIGHT SIDES

In this milestone we are going to learn some words that we can use to describe shapes. The first two words we will learn are **curved** and **straight**.

This is a **straight** line.

This is a **curved** line.

A square has four straight sides.

A circle has one curved side.

A semicircle has one curved side and one straight side.

This funny shape has two curved sides and six straight sides.
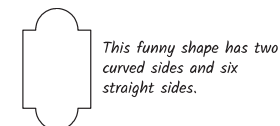
LESSON PRACTICE

Let's make this practice fun by solving a riddle: What comes down but never goes up?

Write the letter which is next to the clue above the matching shape to answer the riddle.

I have one curved side and one straight side. (i)

I have three straight sides. (r)

I have five straight sides and one curved side. (a)

How many sides does the remaining shape have? (Write down the letter next the correct answer.) 4 (l) 5 (t) 6 (n) 7 (k)

r   a   i   n

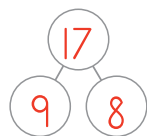---

REVIEW AND PRACTICE

Little Jack Horner was helping his mother in the kitchen. She gave him 17 plums to prepare for a pie but he only gave her 9 back. How many plums did Jack eat?

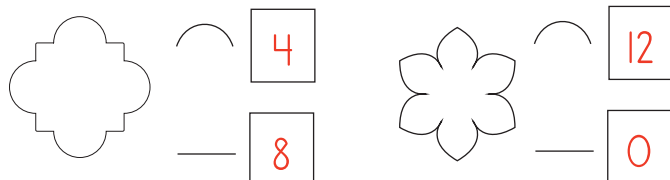17 / 9 \ 8

17 − 9 = 8

Little Jack Horner ate __8__ plums.

Find the fractions (use Sumstix if you need them)

$\frac{1}{2}$ of 20 = 10	$\frac{1}{4}$ of 12 = 3	$\frac{1}{2}$ of 18 = 9
$\frac{1}{4}$ of 4 = 1	$\frac{1}{2}$ of 16 = 8	$\frac{1}{4}$ of 20 = 5
$\frac{1}{2}$ of 10 = 5	$\frac{1}{2}$ of 12 = 6	$\frac{1}{2}$ of 14 = 7

Fill in the missing numbers on the number chart.

61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80

Count the straight and curved sides.

4

8

12

0

Drill 25

3 + 2 = 5	4 + 3 = 7	1 + 9 = 10
7 + 3 = 10	8 + 2 = 10	1 + 3 = 4
5 + 2 = 7	5 + 4 = 9	2 + 3 = 5
2 + 8 = 10	4 + 2 = 6	1 + 5 = 6
5 + 3 = 8	3 + 1 = 4	4 + 1 = 5
1 + 4 = 5	1 + 7 = 8	3 + 6 = 9
7 + 1 = 8	3 + 5 = 8	5 + 1 = 6
4 + 4 = 8	1 + 8 = 9	2 + 5 = 7
8 + 1 = 9	3 + 7 = 10	1 + 2 = 3
4 + 5 = 9	4 + 6 = 10	9 + 1 = 10
1 + 1 = 2	6 + 4 = 10	3 + 4 = 7
3 + 3 = 6	5 + 5 = 10	2 + 1 = 3
6 + 1 = 7	2 + 7 = 9	7 + 2 = 9
2 + 4 = 6	2 + 6 = 8	2 + 2 = 4
1 + 6 = 7	6 + 3 = 9	6 + 2 = 8

Lesson 26

PARALLEL AND INTERSECTING LINES

A pair or group of lines that are **parallel** never ever touch or cross each other. There are two pairs of parallel lines in the picture to the left.
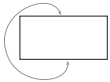
A pair or group of lines that are **intersecting** meet or cross each other. There are two pairs of intersecting lines in the picture to the right.
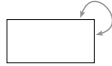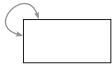
A square or rectangle has two pairs of parallel sides and four pairs of intersecting sides.
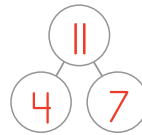
parallell sides

intersecting sides

LESSON PRACTICE
Complete the table.

SHAPE	∥ PARALLEL SIDES	+ INTERSECTING SIDES
△	0	3
○	0	0
□	2	4
⬡	3	6

Wee Willie Winky ran down 7 flights of stairs and then ran up 4 flights of stairs. How many flights of stairs did Wee Willy Winky run over?

$$4 + 7 = 11$$

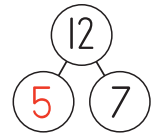Willie ran over __11__ flights of stairs.

Count the dots.

			25
			52
			31

Fill in the missing numbers on the number chart.

81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Fill in the missing number and write the four equations the number bond represents.

$$5 + 7 = 12 \qquad 12 - 5 = 7$$
$$7 + 5 = 12 \qquad 12 - 7 = 5$$

Drill 26

8 + 2 = 10	7 + 2 = 9	1 + 8 = 9
3 + 2 = 5	1 + 2 = 3	5 + 1 = 6
6 + 1 = 7	1 + 5 = 6	3 + 1 = 4
4 + 5 = 9	4 + 1 = 5	7 + 1 = 8
1 + 9 = 10	5 + 4 = 9	1 + 3 = 4
9 + 1 = 10	6 + 3 = 9	5 + 5 = 10
6 + 4 = 10	3 + 6 = 9	1 + 1 = 2
4 + 4 = 8	4 + 3 = 7	5 + 2 = 7
1 + 6 = 7	2 + 3 = 5	3 + 4 = 7
2 + 5 = 7	3 + 5 = 8	2 + 4 = 6
7 + 3 = 10	1 + 7 = 8	5 + 3 = 8
3 + 7 = 10	8 + 1 = 9	4 + 6 = 10
2 + 1 = 3	2 + 8 = 10	3 + 3 = 6
2 + 6 = 8	4 + 2 = 6	2 + 7 = 9
2 + 2 = 4	6 + 2 = 8	1 + 4 = 5

Lesson 27

SYMMETRY

A shape is **symmetrical** if you can fold it in half and have both halves look exactly the same.

EXAMPLE
Tick the shapes that are symmetrical and cross the shapes that are not symmetrical.

ACTIVITY
Try this practical activity to explore symmetry.

You will need:
- a large piece of paper (a page from a sketch or painting pad would be ideal)
- two or three complementary or contrasting colours of acrylic paint (or poster paint)
- optional: a pair of scissors

What to do:
1. Fold the piece of paper in half along the long sides
2. Open up the paper and drop about a teaspoon of each colour on one side of the fold
3. Fold the paper back over and then rub the paint around through the paper
4. Carefully open up the page to reveal your butterfly

Optional: Once the paint is dry you can fold the paper in half and cut out a more defined butterfly shape through the painted area. Mount your butterfly on a sheet of paper that is a contrasting colour.
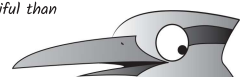
LESSON PRACTICE
Tick the shapes that are symmetrical and cross the shapes that are not symmetrical.
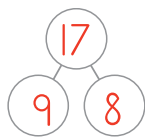
Did you know?

We find symmetry a lot in nature and most people think that symmetrical things look nicer or more beautiful than things that are asymmetrical (not symmetrical).

Mrs. Smith has 17 cookies in a jar. Nine of them are oat cookies and the rest are peanut butter cookies. How many peanut butter cookies are in the jar?

$17 - 9 = 8$

There are __8__ peanut butter cookies.

Fill in the missing numbers on the number chart.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Here's another way to explore symmetry. If you have a small mirror with a flat edge and no frame, grab it. If not, try to make one by carefully folding a piece of aluminium with the shiny side facing out over a square of cardboard (recycle from some packaging - the stiffer the better). Then, place the edge of your mirror on the dotted lines below so that you can see the half shape refelected in the mirror.
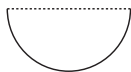
After you've looked at these in a mirror, draw the missing half of each picture!

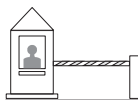|		
2 + 8 = 10	4 + 5 = 9	1 + 4 = 5
1 + 8 = 9	1 + 5 = 6	9 + 1 = 10
8 + 1 = 9	6 + 3 = 9	3 + 2 = 5
2 + 7 = 9	8 + 2 = 10	4 + 3 = 7
3 + 5 = 8	5 + 1 = 6	3 + 3 = 6
5 + 3 = 8	1 + 3 = 4	1 + 9 = 10
7 + 1 = 8	6 + 4 = 10	4 + 1 = 5
4 + 4 = 8	1 + 2 = 3	2 + 4 = 6
6 + 1 = 7	3 + 7 = 10	6 + 2 = 8
1 + 1 = 2	3 + 6 = 9	3 + 4 = 7
5 + 4 = 9	2 + 5 = 7	7 + 3 = 10
5 + 2 = 7	2 + 1 = 3	2 + 2 = 4
1 + 7 = 8	1 + 6 = 7	2 + 3 = 5
5 + 5 = 10	2 + 6 = 8	3 + 1 = 4
7 + 2 = 9	4 + 6 = 10	4 + 2 = 6

Lesson 28

CHECKPOINT 4

RIDDLE

What is always coming but never arrives?

1. I am a symmetrical shape with no straight sides. (R)

2. My sides are all straight but I have no parallel sides. (O)

3. You find me in nature. My picture has one straight side but no symmetry. (R)

4. When you see me in real life, both my colours and my shape are symmetrical. (T)

5. I have one pair of parallel sides but I am not symmetrical. (W)

6. I have four curved sides and eight straight sides. (O)

7. I have two pairs of parallel sides. (O)

8. I have three pairs of parallel sides. (M)

t   o   m   o   r   r   o   w
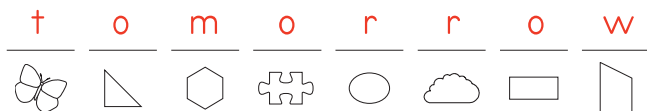
Sarah had 8 crayons in her box. She had 4 more crayons on the floor. How many crayons did Sarah have?
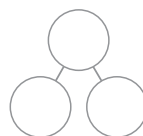
Sarah had __12__ crayons.

Write the numbers in expanded form.

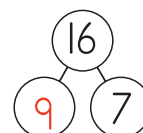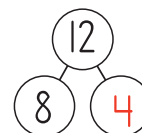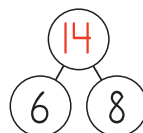$60 = $ __60 + 0__ $37 = $ __30 + 7__

$88 = $ __80 + 8__ $91 = $ __90 + 1__

Fill in the missing numbers on the number chart.

21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40

Use Sumstix to find the missing numbers.

14 / 6 8   12 / 8 4   16 / 9 7

1 + 7 = 8	9 + 1 = 10	6 + 4 = 10
4 + 2 = 6	1 + 2 = 3	3 + 2 = 5
1 + 3 = 4	3 + 5 = 8	1 + 8 = 9
2 + 4 = 6	6 + 2 = 8	8 + 1 = 9
7 + 2 = 9	4 + 5 = 9	5 + 2 = 7
1 + 6 = 7	1 + 4 = 5	3 + 6 = 9
3 + 7 = 10	1 + 5 = 6	4 + 6 = 10
4 + 3 = 7	2 + 1 = 3	5 + 5 = 10
6 + 1 = 7	2 + 6 = 8	3 + 1 = 4
4 + 1 = 5	5 + 1 = 6	1 + 9 = 10
2 + 2 = 4	5 + 3 = 8	3 + 3 = 6
2 + 7 = 9	2 + 3 = 5	6 + 3 = 9
2 + 8 = 10	2 + 5 = 7	4 + 4 = 8
8 + 2 = 10	7 + 3 = 10	7 + 1 = 8
3 + 4 = 7	1 + 1 = 2	5 + 4 = 9

THE ADDITION TABLE

This is an addition table. It shows the answers for all sums between 1+1 and 10+10.

Let's say you want to find 4+5. You put one finger on the 4 in the top row and another finger on the 5 in the first column. Then you move your fingers along the column and row until they meet at the answer, which is 9. Try finding 7+6 by yourself now. Did you get 13?

This year we are going to focus on learning the addition table. Use the addition table at the back of this book to track your progress. Colour in the squares as you master the sums!

+	1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10	11
2	3	4	5	6	7	8	9	10	11	12
3	4	5	6	7	8	9	10	11	12	13
4	5	6	7	8	9	10	11	12	13	14
5	6	7	8	9	10	11	12	13	14	15
6	7	8	9	10	11	12	13	14	15	16
7	8	9	10	11	12	13	14	15	16	17
8	9	10	11	12	13	14	15	16	17	18
9	10	11	12	13	14	15	16	17	18	19
10	11	12	13	14	15	16	17	18	19	20

I'll start with a little secret. Take a look at the shaded row in addition table. Do you notice anything interesting? That's right, the numbers are simply counting up from 2 to 11. So, the secret is that counting and adding 1 are really just the same thing! In other words, if you can count on from a number, you can add one to it. Pretty cool, eh?

LESSON PRACTICE
You should already know most of the sums in the first row of the addition table so let's practice this skill with bigger numbers. Remember to add one to a number you just give the next number. Use your number chart if you need it.

1 + 70 = 71	1 + 35 = 36	31 + 1 = 32
1 + 64 = 65	1 + 70 = 71	1 + 37 = 38
68 + 1 = 69	1 + 45 = 46	1 + 31 = 32
83 + 1 = 84	25 + 1 = 26	49 + 1 = 50
1 + 56 = 57	10 + 1 = 11	71 + 1 = 72

REVIEW AND PRACTICE

Ben counted fifteen ducks on the water. Eight of them were whistler ducks and the rest were wood ducks how many wood ducks were there?
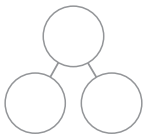
There were 7 wood ducks.

Count the dots.

▦ ▦ ▦ ▦ ••	42
▦ ▦ ▦	27
▦ ▦ ▦ ▦ ▦ ▦ ▦	69

Make a rainbow for the number 11 then fill in the missing numbers in the equations below. You may use colours to make it more interesting.

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

3 + 8 = 11	5 + 6 = 11	7 + 4 = 11
6 + 5 = 11	1 + 10 = 11	8 + 3 = 11
2 + 9 = 11	4 + 7 = 11	9 + 2 = 11

---

8 - 4 = 4	3 - 2 = 1	10 - 4 = 6
5 - 3 = 2	7 - 3 = 4	8 - 1 = 7
9 - 8 = 1	10 - 9 = 1	10 - 8 = 2
8 - 3 = 5	5 - 1 = 4	5 - 2 = 3
7 - 1 = 6	9 - 2 = 7	9 - 4 = 5
8 - 5 = 3	7 - 5 = 2	6 - 1 = 5
6 - 4 = 2	3 - 1 = 2	6 - 2 = 4
4 - 2 = 2	9 - 5 = 4	10 - 5 = 5
8 - 2 = 6	10 - 7 = 3	7 - 4 = 3
4 - 3 = 1	9 - 6 = 3	6 - 5 = 1
10 - 6 = 4	10 - 2 = 8	7 - 2 = 5
8 - 7 = 1	4 - 1 = 3	9 - 7 = 2
9 - 1 = 8	8 - 6 = 2	7 - 6 = 1
5 - 4 = 1	2 - 1 = 1	9 - 3 = 6
10 - 3 = 7	10 - 1 = 9	6 - 3 = 3

Lesson 30

ADDING TWO

Adding two is almost the same as adding one. The only difference is that we count on two more or jump over the next number on a number line or number chart to the number after.

EXAMPLES

Counting on: 9, 10, 11.

$9 + 2 =$ __11__

$10 + 2 =$ __12__

number line: 3 4 5 6 7 8 9 10 11 12 13

LESSON PRACTICE

Remember you can always flip sums around to make them easier!

2 + 8
8 + 2

Add two.

$2 + 5 =$ __7__ $8 + 2 =$ __10__

$6 + 2 =$ __8__ $2 + 2 =$ __4__ $2 + 3 =$ __5__

$2 + 4 =$ __6__ $9 + 2 =$ __11__ $2 + 7 =$ __9__

Subtract (take away) one or two. This time you just have to count backwards.

$6 - 1 =$ __5__ $11 - 2 =$ __9__ $8 - 2 =$ __6__

$4 - 1 =$ __3__ $12 - 2 =$ __10__ $5 - 2 =$ __3__

$10 - 2 =$ __8__ $9 - 1 =$ __8__ $8 - 1 =$ __7__

$11 - 1 =$ __10__ $7 - 2 =$ __5__ $6 - 1 =$ __5__

Jack ate eight pancakes and Jill ate six pancakes. How many pancakes did they eat all together?

_____
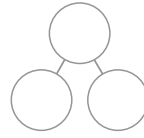
Jack and Jill ate __14__ pancakes.

Find the fractions (use Sumstix if you need them)

$\frac{1}{4}$ of 12 = __3__ $\frac{1}{2}$ of 14 = __7__ $\frac{1}{2}$ of 18 = __9__

$\frac{1}{2}$ of 4 = __2__ $\frac{1}{4}$ of 4 = __1__ $\frac{1}{2}$ of 20 = __10__

$\frac{1}{2}$ of 2 = __1__ $\frac{1}{4}$ of 20 = __5__ $\frac{1}{2}$ of 10 = __5__

Fill in the missing numbers on the number chart.

41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60

Write the numbers in expanded form.

54 = __50 + 4__   26 = __20 + 6__

73 = __70 + 3__   19 = __10 + 9__

Drill 30

$4 - 1 =$ __3__ $9 - 7 =$ __2__ $8 - 5 =$ __3__

$6 - 2 =$ __4__ $2 - 1 =$ __1__ $7 - 4 =$ __3__

$8 - 1 =$ __7__ $10 - 8 =$ __2__ $4 - 3 =$ __1__

$10 - 4 =$ __6__ $5 - 3 =$ __2__ $9 - 3 =$ __6__

$7 - 1 =$ __6__ $3 - 2 =$ __1__ $5 - 2 =$ __3__

$7 - 2 =$ __5__ $10 - 3 =$ __7__ $10 - 5 =$ __5__

$6 - 4 =$ __2__ $8 - 4 =$ __4__ $8 - 7 =$ __1__

$10 - 1 =$ __9__ $8 - 3 =$ __5__ $10 - 2 =$ __8__

$10 - 7 =$ __3__ $7 - 3 =$ __4__ $5 - 1 =$ __4__

$6 - 3 =$ __3__ $6 - 5 =$ __1__ $9 - 6 =$ __3__

$6 - 1 =$ __5__ $9 - 5 =$ __4__ $10 - 6 =$ __4__

$10 - 9 =$ __1__ $9 - 8 =$ __1__ $7 - 6 =$ __1__

$8 - 2 =$ __6__ $9 - 4 =$ __5__ $9 - 1 =$ __8__

$9 - 2 =$ __7__ $8 - 6 =$ __2__ $7 - 5 =$ __2__

$4 - 2 =$ __2__ $3 - 1 =$ __2__ $5 - 4 =$ __1__

Lesson 31

ADDING TEN

You already know how to add ten to a single digit number but you might not realise it, so let's check it out.

EXAMPLE

$7 + 10 =$ _____

We make a train to solve the addition but then we notice that the train is already a number! So, there's no more to do. Easy peasy!

$7 + 10 =$ __17__

LESSON PRACTICE

Find the sums below. Try to do them without Sumstix, if you can.

$10 + 8 =$ __18__ $10 + 6 =$ __16__ $1 + 10 =$ __11__

$10 + 4 =$ __14__ $3 + 10 =$ __13__ $6 + 10 =$ __16__

$7 + 10 =$ __17__ $9 + 10 =$ __19__ $10 + 3 =$ __13__

$10 + 9 =$ __19__ $8 + 10 =$ __18__ $10 + 5 =$ __15__

$5 + 10 =$ __15__ $4 + 10 =$ __14__ $10 + 7 =$ __17__

The next few lessons will be much easier if you remember the ten rainbow, so let's review it now. Fill in the missing numbers:

__8__ + 2 = 10   9 + __1__ = 10   7 + __3__ = 10

__5__ + 5 = 10   __4__ + 6 = 10   3 + __7__ = 10

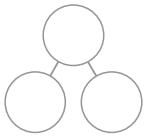1 + __9__ = 10   __2__ + 8 = 10   __6__ + 4 = 10

REVIEW AND PRACTICE

Ella is cleaning her room and finds only six books on her bookshelf. If there are normally 11 books on her shelf, how many books does Ella need to put away?
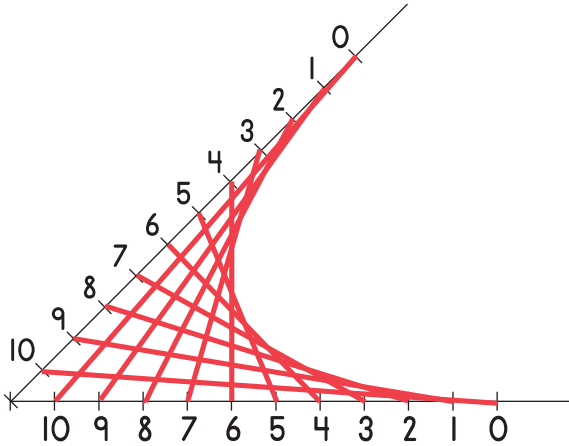
Ella needs to find and put away __5__ books.

Fill in the missing numbers on the number chart.

61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80

Use a ruler and a pencil to join the points on the two number lines so that the numbers add to 10. Do this carefully and you will have a nice pattern!

Drill 31

2 - 1 = 1	9 - 6 = 3	5 - 1 = 4
10 - 3 = 7	5 - 2 = 3	6 - 2 = 4
9 - 3 = 6	9 - 5 = 4	10 - 5 = 5
7 - 4 = 3	8 - 3 = 5	3 - 1 = 2
6 - 4 = 2	10 - 2 = 8	10 - 6 = 4
10 - 4 = 6	7 - 3 = 4	7 - 6 = 1
9 - 4 = 5	9 - 7 = 2	5 - 4 = 1
6 - 3 = 3	4 - 3 = 1	8 - 5 = 3
7 - 5 = 2	6 - 5 = 1	10 - 9 = 1
10 - 8 = 2	8 - 1 = 7	4 - 2 = 2
8 - 4 = 4	5 - 3 = 2	4 - 1 = 3
8 - 7 = 1	7 - 1 = 6	9 - 2 = 7
7 - 2 = 5	8 - 2 = 6	6 - 1 = 5
10 - 1 = 9	10 - 7 = 3	8 - 6 = 2
3 - 2 = 1	9 - 8 = 1	9 - 1 = 8

Lesson 32

ADDING NINE

Here's a cute story that can remind us how to add nine to any number:

Blue Sumstix is sad and sitting all alone. Little Five comes along and asks, "What's wrong, Nine?" "I really want to be ten!" sobs Nine. "Oh, is that all? My friends One and Four can fix that," chirps five as she runs off towards the other Sumstix.

Let's look at an example to see how Five will help Nine.

EXAMPLE

9 + 5 = ____
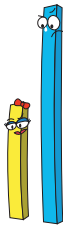
9+5

Break the five into 1+4

9+1+4

Join 9+1 to make 10

10+4
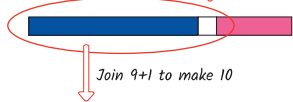
9 + 5 = 14
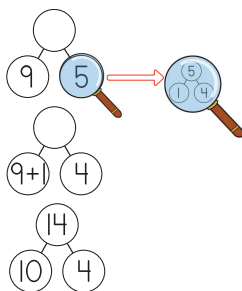
LESSON PRACTICE
Solve the sums below.

9 + 5 = 9 + 1 + __4__ = 14   9 + 9 = 9 + 1 + __8__ = 18

9 + 7 = 9 + 1 + __6__ = 16   9 + 6 = 9 + 1 + __5__ = 15

9 + 2 = 9 + 1 + __1__ = 11   9 + 8 = 9 + 1 + __7__ = 17

9 + 4 = 9 + 1 + __3__ = 13   9 + 3 = 9 + 1 + __2__ = 12

REVIEW AND PRACTICE

Tom's bookself holds ten books. Tom took some books down to read them. There are seven books left on the self now. How many books did Tom take?
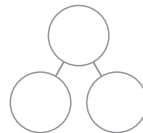
Tom took __3__ books.

Count on from the numbers.

20, 21 , 22 , 23   48, 49 , 50 , 51

65, 66 , 67 , 68   51, 52 , 53 , 54

89, 90 , 91 , 92   36, 37 , 38 , 39

RIDDLE
What two things can you never eat for breakfast?

10 + 8 = 18 (A)   2 + 6 = 8 (D)   5 + 2 = 7 (N)

2 + 8 = 10 (U)   10 + 2 = 12 (H)   7 + 10 = 17 (N)

9 + 10 = 19 (I)   9 + 2 = 11 (N)   58 + 1 = 59 (E)

10 + 6 = 16 (R)   34 + 1 = 35 (!)   10 + 5 = 15 (D)

3 + 2 = 5 (L)   86 + 1 = 87 (N)   2 + 4 = 6 (C)

L U N C H   A N D
5 10 7 6 12   18 87 8

D I N N E R !
15 19 11 17 59 16 35

6 - 1 = 5	3 - 2 = 1	5 - 3 = 2
4 - 2 = 2	3 - 1 = 2	4 - 3 = 1
7 - 4 = 3	10 - 4 = 6	9 - 8 = 1
9 - 5 = 4	8 - 1 = 7	10 - 8 = 2
10 - 5 = 5	6 - 4 = 2	8 - 5 = 3
7 - 3 = 4	10 - 9 = 1	7 - 1 = 6
10 - 6 = 4	8 - 7 = 1	7 - 6 = 1
6 - 3 = 3	8 - 2 = 6	9 - 7 = 2
5 - 1 = 4	9 - 3 = 6	4 - 1 = 3
5 - 2 = 3	9 - 6 = 3	6 - 2 = 4
10 - 7 = 3	9 - 2 = 7	8 - 6 = 2
6 - 5 = 1	8 - 4 = 4	5 - 4 = 1
7 - 2 = 5	10 - 1 = 9	7 - 5 = 2
9 - 1 = 8	9 - 4 = 5	8 - 3 = 5
2 - 1 = 1	10 - 3 = 7	10 - 2 = 8

Lesson 33

ADDING EIGHT

Last lesson we saw that we can add any number to nine easily by breaking up the other number (into one plus the rest) so that we can turn the nine into a ten. We can do a similar thing to help us add numbers to eight. Firstly, you need to remember the missing number in the equation below. Fill it in now.

$$8 + \underline{\hspace{1cm}} = 10$$

I hope you answered 2. If that was hard for you, please practice your ten rainbows and number bond flashcards AS12-AS17 some more.

EXAMPLE

8 + 4 = _____

Break the 4 into 2+2

8+4

8+2+2

Join 8+2 to make 10

10+2

8 + 4 = 12

LESSON PRACTICE

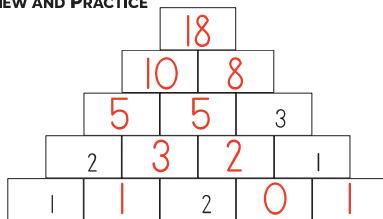|	
8 + 4 = 8 + 2 + 2 = 12	8 + 9 = 8 + 2 + 7 = 17
8 + 7 = 8 + 2 + 5 = 15	8 + 3 = 8 + 2 + 1 = 11
8 + 5 = 8 + 2 + 3 = 13	8 + 6 = 8 + 2 + 4 = 14
8 + 8 = 8 + 2 + 6 = 16	8 + 2 = 8 + 2 + 0 = 10

REVIEW AND PRACTICE

In the puzzle the box above two squares should contain the sum of the two squares. Fill in the missing numbers. Eg:

3+2=5 → | 5 |
| 3 | 2 |

18	
10	8
5	5	3
2	3	2	1
1	1	2	0	1

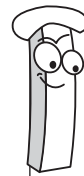|		
$\frac{1}{2}$ of 10 = 5	$\frac{1}{2}$ of 18 = 9	$\frac{1}{4}$ of 4 = 1
$\frac{1}{4}$ of 8 = 2	$\frac{1}{2}$ of 16 = 8	$\frac{1}{2}$ of 2 = 1
$\frac{1}{2}$ of 14 = 7	$\frac{1}{2}$ of 4 = 2	$\frac{1}{2}$ of 6 = 3

Add nine.

6 + 9 = 5 + 1 + 9 = 15	3 + 9 = 2 + 1 + 9 = 12
8 + 9 = 7 + 1 + 9 = 17	7 + 9 = 6 + 1 + 9 = 16
4 + 9 = 3 + 1 + 9 = 13	5 + 9 = 4 + 1 + 9 = 14

Try adding nine without the extra help.

9 + 3 = 12	6 + 9 = 15	8 + 9 = 17
7 + 9 = 16	9 + 9 = 18	2 + 9 = 11
1 + 9 = 10	9 + 8 = 17	9 + 4 = 13

---

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

Lesson 34

ADDING SEVEN

Adding seven is just like adding nine or eight but today we are going to see how to solve the problems without Sumstix. Start by filling in the missing number in the equation:
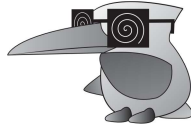
$$7 + \underline{\quad} = 10$$

EXAMPLE

$$7 + 5 = \underline{\quad}$$

$$7 + 5 = \underline{\quad}$$

Today I feel like solving the problem using just the numbers (but you may still use Sumstix or number bonds if you find it easier).

$$7 + 3 + 2 = \underline{\quad}$$

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

LESSON PRACTICE

$7 + 5 = 7 + 3 + \underline{2} = \underline{12}$ $7 + 9 = 7 + 3 + \underline{6} = \underline{16}$

$7 + 8 = 7 + 3 + \underline{5} = \underline{15}$ $7 + 6 = 7 + 3 + \underline{3} = \underline{13}$

$7 + 7 = 7 + 3 + \underline{4} = \underline{14}$ $7 + 4 = 7 + 3 + \underline{1} = \underline{11}$

Kyra was sorting out her art supplies. She had a special set of twelve glitter pens. Four of them had dried out. How many were still good?
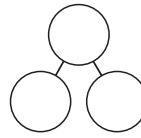
Kyra had $\underline{8}$ good pens.

Count the dots.
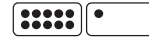
⚅ •	11
⚅ ⚅ ⚅ ⚅ ⚅ ⚅ ••	62
⚅ ⚅ ⚅ ⚅ ⚅⚄	47

Add eight or nine.

$8 + 5 = 8 + 2 + 3 = 13$ $9 + 3 = 9 + 1 + 4 = 14$

$8 + 3 = \underline{11}$ $9 + 5 = \underline{14}$

$8 + 8 = \underline{16}$ $9 + 4 = \underline{13}$

$8 + 4 = \underline{12}$ $9 + 9 = \underline{18}$

$8 + 6 = \underline{14}$ $9 + 2 = \underline{11}$

$9 + 8 = \underline{17}$ $8 + 9 = \underline{17}$

$9 + 6 = \underline{15}$ $9 + 7 = \underline{16}$

Drill 34

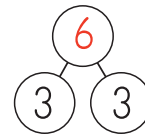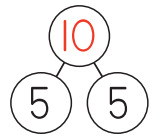|		
$4 + 4 = 8$	$2 + 2 = 4$	$2 + 4 = 6$
$8 + 2 = 10$	$5 + 1 = 6$	$5 + 4 = 9$
$2 + 1 = 3$	$7 + 2 = 9$	$3 + 6 = 9$
$3 + 5 = 8$	$1 + 6 = 7$	$3 + 2 = 5$
$1 + 1 = 2$	$4 + 5 = 9$	$2 + 5 = 7$
$3 + 3 = 6$	$2 + 3 = 5$	$9 + 2 = 11$
$4 + 1 = 5$	$6 + 1 = 7$	$5 + 5 = 10$
$1 + 2 = 3$	$1 + 9 = 10$	$2 + 7 = 9$
$3 + 7 = 10$	$10 + 2 = 12$	$6 + 2 = 8$
$4 + 2 = 6$	$1 + 5 = 6$	$5 + 2 = 7$
$3 + 4 = 7$	$5 + 1 = 6$	$4 + 2 = 6$
$5 + 3 = 8$	$2 + 1 = 3$	$1 + 8 = 9$
$5 + 2 = 7$	$7 + 1 = 8$	$4 + 1 = 5$
$1 + 1 = 2$	$8 + 2 = 10$	$2 + 8 = 10$
$7 + 3 = 10$	$7 + 2 = 9$	$4 + 3 = 7$

Lesson 35

DOUBLES

Do you remember what a double is? The examples below are all doubles that you should already know:
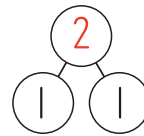
$1 + 1 = 2$ $3 + 3 = 6$ $5 + 5 = 10$

For fun, build all the doubles you can with Sumstix. Write out the sums for all the doubles you built and use your Sumstix to find the answers to those that you don't know.

Most people find learning the doubles easy, but even if you find it a bit hard, it's worth putting in the effort to learn them. We'll see why next lesson.

LESSON PRACTICE

$3 + 3 = \underline{6}$ $10 + 10 = \underline{20}$ $2 + 2 = \underline{4}$

$8 + 8 = \underline{16}$ $4 + 4 = \underline{8}$ $9 + 9 = \underline{18}$

$1 + 1 = \underline{2}$ $8 + 8 = \underline{16}$ $6 + 6 = \underline{12}$

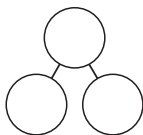$6 + 6 = \underline{12}$ $7 + 7 = \underline{14}$ $5 + 5 = \underline{10}$

$7 + 7 = \underline{14}$ $3 + 3 = \underline{6}$ $9 + 9 = \underline{18}$

Tom has some pet fish. He has six red fish and eight blue fish. How many pet fish does Tom have?

_____

Tom had __14__ pet fish.

Write the numbers in expanded form.

71 = ____70 + 1____   17 = ____10 + 7____

59 = ____50 + 9____   26 = ____20 + 6____

Add seven, eight or nine.   *If you can do these sums without the extra work, go for it!*

7 + 4 = (7 + 3 + 1) = 11   8 + 7 = __15__

7 + 7 = __14__   9 + 8 = __17__

9 + 6 = __15__   9 + 1 = __10__

9 + 7 = __16__   7 + 8 = __15__

8 + 4 = __12__   8 + 3 = __11__

8 + 6 = __14__   7 + 5 = __12__

8 + 8 = __16__   9 + 3 = __12__

Drill 35
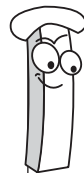
7 + 3 = 10	3 + 1 = 4	4 + 2 = 6
4 + 1 = 5	5 + 4 = 9	4 + 2 = 6
3 + 3 = 6	6 + 2 = 8	2 + 4 = 6
7 + 2 = 9	5 + 1 = 6	2 + 1 = 3
6 + 1 = 7	1 + 1 = 2	2 + 7 = 9
2 + 1 = 3	4 + 1 = 5	5 + 2 = 7
2 + 8 = 10	9 + 2 = 11	4 + 3 = 7
3 + 1 = 4	5 + 3 = 8	2 + 5 = 7
2 + 2 = 4	3 + 2 = 5	5 + 5 = 10
6 + 4 = 10	5 + 1 = 6	3 + 5 = 8
1 + 3 = 4	1 + 2 = 3	4 + 6 = 10
3 + 6 = 9	2 + 3 = 5	2 + 6 = 8
9 + 1 = 10	7 + 1 = 8	1 + 5 = 6
5 + 2 = 7	10 + 1 = 11	8 + 1 = 9
8 + 2 = 10	8 + 1 = 9	10 + 2 = 12

Lesson 36

DOUBLES PLUS ONE

Answer the following sums. Work down the columns. Use Sumstix if you need them. Do you see any patterns?

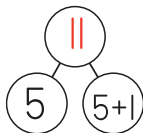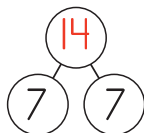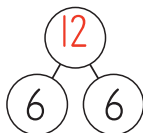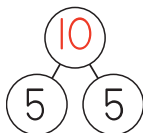|		
5 + 5 = 10	6 + 6 = 12	7 + 7 = 14
5 + 5 + 1 = 11	6 + 6 + 1 = 13	7 + 7 + 1 = 15
5 + 6 = 11	6 + 7 = 13	7 + 8 = 15

Fill in the missing number in each number bond. Work down the columns.

10 → 5, 5   12 → 6, 6   14 → 7, 7

11 → 5, 5+1   13 → 6, 6+1   15 → 7, 7+1

11 → 5, 6   13 → 6, 7   15 → 7, 8
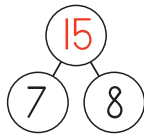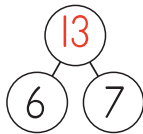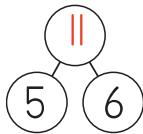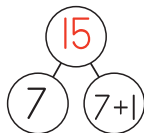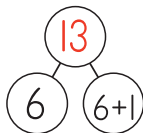
LESSON PRACTICE

4 + 3 = __7__   6 + 5 = __11__   9 + 10 = __19__

8 + 7 = __15__   6 + 7 = __13__   9 + 8 = __17__

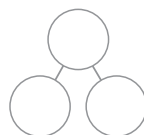2 + 3 = __5__   7 + 8 = __15__   7 + 6 = __13__

Indie had eight cookies. She gave five of them to her friends. How many cookies did Indie have left?

_____

Indie had __3__ cookies left.

Count on from the numbers.

41, __42__, __43__, __44__   63, __64__, __65__, __66__

65, __66__, __67__, __68__   26, __27__, __28__, __29__

57, __58__, __59__, __60__   47, __48__, __49__, __50__

Double or add seven, eight or nine.

5 + 5 = __10__   9 + 3 = __12__

9 + 2 = __11__   9 + 7 = __16__

10 + 10 = __20__   1 + 1 = __2__

8 + 4 = __12__   8 + 3 = __11__

2 + 2 = __4__   9 + 8 = __17__

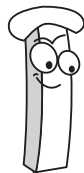8 + 9 = __17__   9 + 9 = __18__

6 + 6 = __12__

9 + 4 = __13__

Often more than one strategy will work. Use the one you like best.

Remember, we want to eventually learn these sums so well that we don't need any strategies. Keep doing those drills!

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

The "Hard" Facts

This addition table shows all the sums that you can solve with the strategies you've learned in this milestone. If you look really carefully, you'll notice that there's really only three number bonds left to learn and you should already know these because you've been practising them since last year!

Some people call these "the hard ones" and if you do have a bit of trouble with them, maybe you can come up with your own strategies for solving or remembering them.

+	1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10	11
2	3	4	5	6	7	8	9	10	11	12
3	4	5	6	7	8	9	10	11	12	13
4	5	6	7	8	9	10	11	12	13	14
5	6	7	8	9	10	11	12	13	14	15
6	7	8	9	10	11	12	13	14	15	16
7	8	9	10	11	12	13	14	15	16	17
8	9	10	11	12	13	14	15	16	17	18
9	10	11	12	13	14	15	16	17	18	19
10	11	12	13	14	15	16	17	18	19	20

Lesson Practice

Fill in the missing numbers in the number bonds. And then write the four equations represented by each. You already know these, but if you don't, make sure you practice their flashcards often.
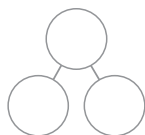
9 (3, 6)
3 + 6 = 9   9 - 3 = 6
6 + 3 = 9   9 - 6 = 3

8 (3, 5)
3 + 5 = 8   8 - 3 = 5
5 + 3 = 8   8 - 5 = 3

10 (4, 6)
4 + 6 = 10   10 - 4 = 6
6 + 4 = 10   10 - 6 = 4

Review and Practice

Gabby has eight teddy bears. Three of them are brown and the rest are yellow. How many of Gabby's teddy bears are yellow?

___ 5 teddy bears are yellow.

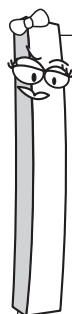Write the following numbers on the place value charts.

	t	o
53	5	3

	t	o
25	2	5

Mixed practice. Choose your strategy.

7 + 8 = 15	8 + 9 = 17
8 + 9 = 17	9 + 3 = 12
9 + 6 = 15	8 + 8 = 16
9 + 4 = 13	8 + 5 = 13
7 + 7 = 14	9 + 2 = 11
6 + 5 = 11	6 + 7 = 13
5 + 6 = 11	7 + 4 = 11

---

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

Lesson 38

SUBTRACTING FROM NUMBERS GREATER THAN TEN

EXAMPLE

$$17 - 8 = \underline{}$$

If you know your addition facts really well, then you can work out the answer to any subtraction by thinking of it as a missing number problem:

$$8 + \underline{} = 17$$

But if you don't know the facts so well, then this little trick may help. Imagine that you are at the shop and you have a $10 note in one pocket and $7 in coins in the other pocket. You want to buy something for $8. You know the coins won't be enough money so you just pull out the $10 note and pay with it. How much change will you get back? Yes, $2. You put the $2 coin in with the other coins, so how much do you have in that pocket now? Right, $7 + $2 = $9, which is the answer to the subtraction.

Let's look at this same idea with Sumstix.

Step 1: Make the total with Sumstix:

If you learn your addition facts really well, you won't have to keep working subtraction facts out.

Step 2: Take eight away from the ten:

Don't forget to practice, practice, practice with your flashcards, drills and games!

Step 3: Add the two to the seven.

LESSON PRACTICE
Use whichever method you like best to solve the subtractions:

15 - 9 = 6	15 - 6 = 9	11 - 5 = 6
14 - 8 = 6	14 - 6 = 8	14 - 7 = 7
11 - 2 = 9	12 - 7 = 5	16 - 8 = 8
13 - 4 = 9	11 - 3 = 8	13 - 6 = 7

The same shape is the same number. Work out what number each shape represents.

○ + ○ = △   ○ = 3

□ + ○ = 8   □ = 5

□ + □ = 10   △ = 6

Fill in the missing numbers:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

RIDDLE
Which question can you never truthfully answer with "yes"?

8 + 5 = 13 (P)	5 + 9 = 14 (L)	8 + 9 = 17 (R)
9 + 2 = 11 (E)	7 + 9 = 16 (O)	9 + 9 = 18 (S)
6 + 6 = 12 (U)	10 + 9 = 19 (Y)	7 + 8 = 15 (A)
8 + 7 = 15 (A)	5 + 6 = 11 (E)	4 + 7 = 11 (E)

A   R   E   Y   O   U
15 17 11   19 16 12

A   S   L   E   E   P
15 18 14 11 11 13

Drill 38

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

Lesson 39

CHECKPOINT 5

Add one or two.

1 + 22 = 23	2 + 60 = 62	37 + 1 = 38
2 + 16 = 18	1 + 69 = 70	88 + 2 = 90

Add seven, eight or nine.

9 + 3 = 12	7 + 4 = 11
7 + 6 = 13	9 + 7 = 16
9 + 4 = 13	8 + 9 = 17
9 + 8 = 17	9 + 9 = 18
8 + 5 = 13	8 + 7 = 15
7 + 5 = 12	8 + 8 = 16

Doubles and doubles plus one.

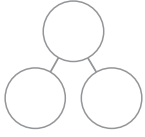|	
6 + 7 = 13	6 + 6 = 12
7 + 7 = 14	5 + 6 = 11
7 + 8 = 15	8 + 9 = 17
9 + 9 = 18	8 + 8 = 16

REVIEW AND PRACTICE

John recorded the weather each day in April for his science lessons. He found that 16 days were rainy. Seven of the rainy days were also windy. How many days was it rainy but not windy?

There were __9__ rainy days with no wind.

Count on from the numbers.

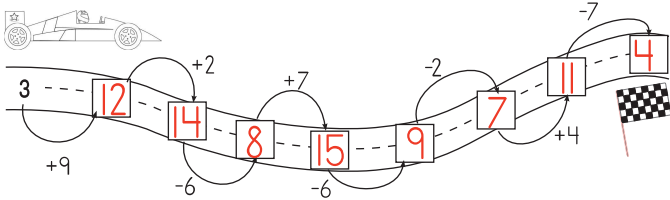46, __47 48 49__   34, __35 36 37__

23, __24 25 26__   61, __62 63 64__

60, __61 62 63__   59, __60 61 62__

Fill in the missing numbers:

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20

Follow the instructions.

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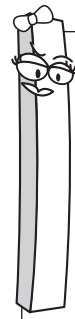
4 - 1 = 3	5 - 2 = 3	8 - 1 = 7
9 - 2 = 7	7 - 2 = 5	3 - 1 = 2
9 - 1 = 8	7 - 2 = 5	6 - 2 = 4
11 - 1 = 10	6 - 1 = 5	8 - 2 = 6
6 - 2 = 4	3 - 1 = 2	2 - 1 = 1
11 - 2 = 9	4 - 2 = 2	5 - 2 = 3
4 - 1 = 3	7 - 2 = 5	4 - 2 = 2
2 - 1 = 1	9 - 1 = 8	11 - 2 = 9
3 - 1 = 2	7 - 1 = 6	11 - 1 = 10
10 - 1 = 9	6 - 2 = 4	5 -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

Lesson 40

GENERAL REVISION

Each bundle contains ten sticks. How many sticks are there all together?

__75__

Write each number in expanded form:

64 = __60 + 4__   92 = __90 + 2__

35 = __30 + 5__   95 = __90 + 5__

Find the fractions (use Sumstix if you need them)

$\frac{1}{4}$ of 20 = __5__ $\frac{1}{2}$ of 20 = __10__ $\frac{1}{2}$ of 8 = __4__

$\frac{1}{4}$ of 8 = __2__ $\frac{1}{4}$ of 12 = __3__ $\frac{1}{2}$ of 14 = __7__

$\frac{1}{2}$ of 6 = __3__ $\frac{1}{2}$ of 18 = __9__ $\frac{1}{2}$ of 2 = __1__
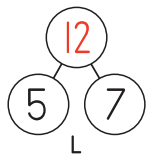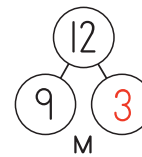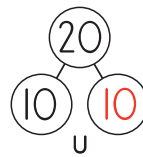
Write the following numbers on the place value charts.
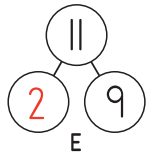
85	t	o
	8	5

21	t	o
	2	1

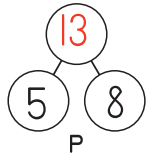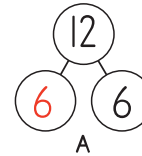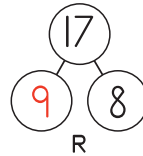| 72	t	o
	7	2

10	t	o
	1	0

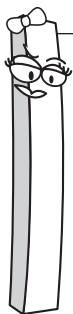## RIDDLE
What do you get when you cross a sheep with a kangaroo?
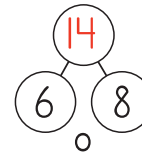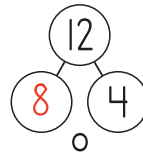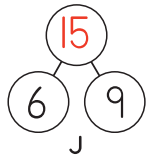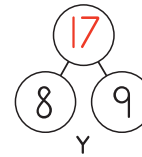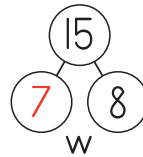
A   W O O L Y
6   7 14 8 12 17

J U M P E R
15 10 3 13 2 9

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

Addition Table Progress Record

Colour in the squares as you learn each fact.

+	1	2	3	4	5	6	7	8	9	10
1	2	3	4	5	6	7	8	9	10	11
2	3	4	5	6	7	8	9	10	11	12
3	4	5	6	7	8	9	10	11	12	13
4	5	6	7	8	9	10	11	12	13	14
5	6	7	8	9	10	11	12	13	14	15
6	7	8	9	10	11	12	13	14	15	16
7	8	9	10	11	12	13	14	15	16	17
8	9	10	11	12	13	14	15	16	17	18
9	10	11	12	13	14	15	16	17	18	19
10	11	12	13	14	15	16	17	18	19	20

Tangram puzzle for lesson 9

Colour the tangram pieces below (optional) then remove this page from the book and glue it to a piece of card (recycle some packaging like a cereal box). Cut out the pieces and you will have a tangram puzzle.

Use your puzzle to make the shapes in lesson 9. Search the Internet for "tangrams" to find heaps more! Can you make your own designs and pictures?

Challenge: try making each of the digits from 0-9. You must use all pieces every time.