$$\begin{array}{r} 52 \\ +\ 34 \\ \hline \end{array} \qquad \begin{array}{r} 99 \\ -\ 54 \\ \hline \end{array}$$

Name: _____

Foundational Numeracy

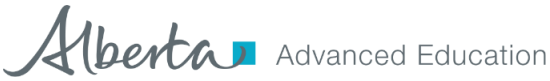
Module 2: Adding and Subtracting Whole Numbers

Solutions Manual

V 1.20 - July 2020

Developed for Alberta's Community Adult Learning Program

Funded by Alberta Advanced Education



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Attn: Curriculum Development

Contents

Introduction to the Module

In this module, you will work on basic math related to whole number arithmetic. Numeracy is important and is part of our complex world. Whether it is calculating a budget or paying bills, arithmetic skills are critical. Enjoy this module!

Important

When you see an object like the one below, you can either use the camera on your phone or tablet, or you can click on the link to play the video of the math example.

Want to watch a video of this lesson?

https://youtu.be/QtwiGWi5a7E

Specific Learning Outcomes

The table below displays the skills and knowledge that you will explore in this module. This is your opportunity to evaluate your own skills to see if you can do these things. At the end of this module, you will be invited to re-evaluate your skills to measure the progress you have made.

In this module I will learn how to …	I can't do this	I can do this with help	I can do this!
1. Add one-digit numbers			
2. Add two-digit numbers			
3. Estimate sums and adding multi-digit numbers			
4. Subtract one-digit numbers			
5. Subtract two-digit numbers without borrowing			
6. Subtract two-digit numbers with borrowing			
7. Estimate and subtract multi-digit numbers			

Essential Skills

The essential skills used in this module are the following:

Reading: Understanding materials written in sentences or paragraphs

Numeracy: Using and understanding numbers

Writing: Writing on paper or typing on a computer

Vocabulary: Gaining related vocabulary

Unit 1: Addition

Keywords

Adding/ Addition	To join something to something else to increase the size, number, or amount. In an equation, this is indicated by the "+" sign.
Carry	To transfer a digit from one column of digits to another column of digits
Equation	A statement that the values of two mathematical expressions are equal (indicated by the "=" sign)
Operation	A single math task. Adding is an operation, and so are subtracting, multiplying, and dividing
Sum	The answer to an adding equation; also known as the **total**
Total	The answer to an adding equation; also known as the **sum**

Lesson 1.1: Basic Addition Facts

Introductory Video:

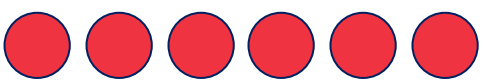
SCAN ME

Want to watch a video of this lesson?

https://youtu.be/AuX7nPBqDts

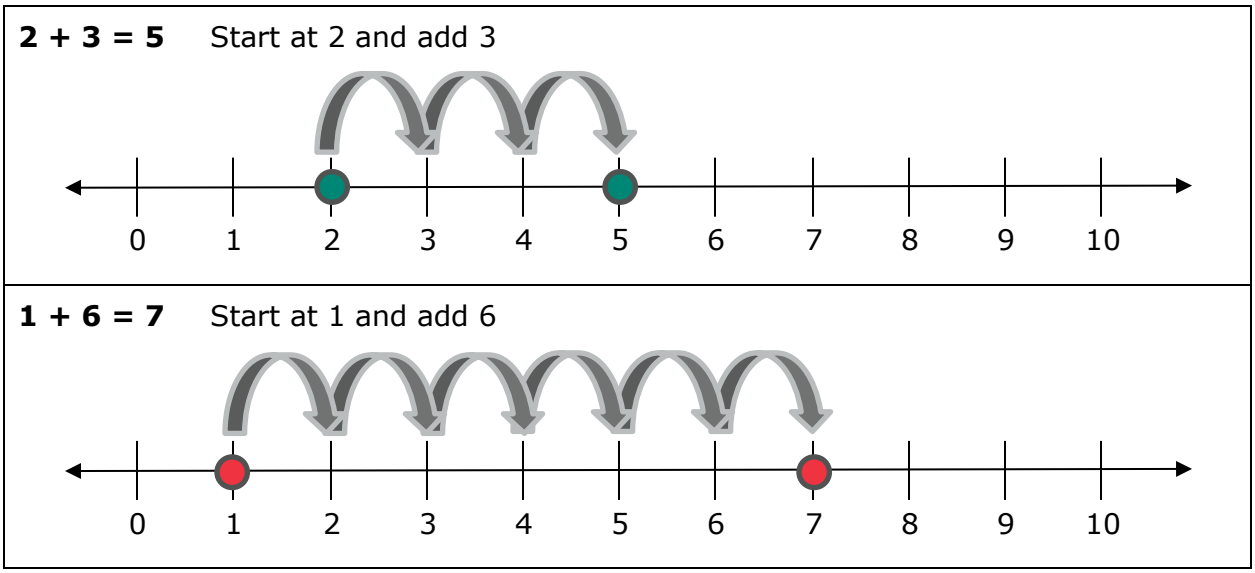
Adding is like counting objects. We can count anything such as the number of cars in a parking lot, the amount of nickels you have in a jar, etc. This is called finding the sum or total.

Examples: We can just count the number of objects. Or we can add. The result is the same.

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

Another method of counting is to use a number line.

The first number tells you where to start and the second number tells you how far to move to the right.



Addition Facts

We can add only two digits at a time. Even if we are adding up columns of more than two numbers. We can also add numbers in any order.

Example: 2 + 3 = 5 and 3 + 2 = 5

Student Example 1

Adding two even numbers:

2 + 6 =

Want to watch a video of this lesson?
https://youtu.be/SFRTTUtAjg4
Watch video from 3:35

Student Example 2

Adding two odd numbers:

1 + 3 =

Student Example 3

Adding one even number and one odd number:

4 + 3 =

Exercise 1.1

Fill in the blanks with all the ways you can add two digits to get the required result. Don't reverse the order as we can add the numbers in any order to get the desired result.

1. __0__ + __1__ = 1

2. __0__ + __2__ = 2
   __1__ + __1__ = 2

3. __0___ + __3___ = 3
   __1___ + ___2__ = 3

4. ___0__ + __4___ = 4
   ___1__ + __3___ = 4
   ___2__ + ___2__ = 4

5. ___0__ + __5___ = 5
   ___1__ + __4___ = 5
   ___2__ + __3___ = 5

6. __0___ + __6___ = 6
   __1___ + __5___ = 6
   __2___ + __4___ = 6
   __3___ + __3___ = 6

7. __0___ + __7___ = 7
   __1___ + __6___ = 7
   __2___ + __5___ = 7
   __3___ + __4___ = 7

8. __0___ + __8___ = 8
   __1___ + __7___ = 8
   __2___ + __6___ = 8
   __3___ + __5___ = 8
   __4___ + __4___ = 8

9. __0___ + __9___ = 9
   __1___ + __8___ = 9
   __2___ + __7___ = 9
   __3___ + __6___ = 9
   __4___ + __5___ = 9

10. __1___ + __9___ = 10
    __2___ + __8___ = 10
    __3___ + __7___ = 10
    __4___ + __6___ = 10
    __5___ + __5___ = 10

11. __2__ + __9__ = 11

__3___ + _8____ = 11

__4___ + _7____ = 11

__5___ + _6____ = 11

12. __3__ + __9__ = 12

__4___ + _8____ = 12

___5__ + _7____ = 12

___6__ + _6____ = 12

13. __4___ + __9___ = 13

__5___ + __8___ = 13

__6___ + __7___ = 13

14. __5___ + __9___ = 14

__6___ + __8___ = 14

__7___ + __7___ = 14

15. __6___ + __9___ = 15

__7___ + __8___ = 15

16. __7___ + __9___ = 16

__8___ + __9___ = 16

17. __8___ + __9___ = 17

18. __9___ + __9___ = 18

Addition Facts Continued

Practicing your addition facts will help you to become much better at arithmetic. Practice daily until you remember the facts.

Fill in the chart below with the addition facts you already know leave the ones blank that you have to think about. Keep this with you as you continue to learn your addition facts. You can colour the ones you know as you don't need to practice those ones.

+	0	1	2	3	4	5	6	7	8	9
0										
1										
2										
3										
4										
5										
6										
7										
8										
9										

Lesson 1.2: Adding One-Digit Numbers

When adding single-digit numbers together, they can be in a column or in a row. Remember numbers can be added in any order.

Exercise 1.2

No Carries

1. $\begin{array}{r} 5 \\ +\ 2 \\ \hline \mathbf{7} \end{array}$

2. $\begin{array}{r} 3 \\ +\ 3 \\ \hline \mathbf{6} \end{array}$

3. $\begin{array}{r} 7 \\ +\ 2 \\ \hline \mathbf{9} \end{array}$

4. $\begin{array}{r} 4 \\ +\ 1 \\ \hline \mathbf{5} \end{array}$

5. 1 + 2 = **3**

6. 5 + 1 = **6**

7. 2 + 6 = **8**

8. 4 + 3 = **7**

9. $\begin{array}{r} 5 \\ +\ 4 \\ \hline \mathbf{9} \end{array}$

10. $\begin{array}{r} 1 \\ +\ 5 \\ \hline \mathbf{6} \end{array}$

11. $\begin{array}{r} 3 \\ +\ 2 \\ \hline \mathbf{5} \end{array}$

12. $\begin{array}{r} 6 \\ +\ 3 \\ \hline \mathbf{9} \end{array}$

13. 2 + 2 = **4**

14. 3 + 4 = **7**

15. 3 + 1 = **4**

16. 4 + 2 = **6**

17. $\begin{array}{r} 2 \\ +\ 5 \\ \hline \mathbf{7} \end{array}$

18. $\begin{array}{r} 3 \\ +\ 5 \\ \hline \mathbf{8} \end{array}$

19. $\begin{array}{r} 5 \\ +\ 4 \\ \hline \mathbf{9} \end{array}$

20. $\begin{array}{r} 1 \\ +\ 6 \\ \hline \mathbf{9} \end{array}$

21. 6 + 2 = **8**

22. 4 + 5 = **9**

23. 2 + 4 = **6**

24. 3 + 6 = **9**

25. $\begin{array}{r} 1 \\ +\ 8 \\ \hline \mathbf{9} \end{array}$

26. $\begin{array}{r} 4 \\ +\ 4 \\ \hline \mathbf{8} \end{array}$

27. $\begin{array}{r} 5 \\ +\ 3 \\ \hline \mathbf{8} \end{array}$

28. $\begin{array}{r} 2 \\ +\ 7 \\ \hline \mathbf{9} \end{array}$

Carries

29. 5 + 5 = **10**

30. 7 + 4 = **11**

31. 5 + 8 = **13**

32. 8 + 7 = **15**

33. 9 + 5 = **14**

34. 8 + 3 = **11**

35. 6 + 6 = **12**

36. 5 + 9 = **14**

37. 7 + 9 = **16**

38. 5 + 6 = **11**

39. 8 + 8 = **16**

40. 4 + 9 = **13**

41. 3 + 8 = **11**

42. 7 + 8 = **15**

43. 9 + 5 = **14**

44. 2 + 8 = **10**

45. 6 + 6 = **12**

46. 6 + 8 = **14**

47. 9 + 7 = **16**

48. 5 + 9 = **14**

49. 7 + 6 = **13**

50. 7 + 7 = **14**

51. 3 + 8 = **11**

52. 9 + 9 = **18**

53. 9 + 8 = **17**

54. 6 + 4 = **10**

55. 7 + 8 = **15**

56. 8 + 9 = **17**

57. 2 + 9 = **11**

58. 5 + 7 = **12**

59. 3 + 8 = **11**

60. 6 + 7 = **13**

Lesson 1.3: Adding One-Digit Numbers, Part 2

When adding 3 or 4 one-digit numbers, try to add the digits you know the sum of first and then add the next digit or digits. This will make adding the numbers quicker.

Exercise 1.3

1. 4 + 3 + 2 = **9**

2. 6 + 0 + 3 = **9**

3. 4 + 2 + 2 = **8**

4. 4 + 6 + 3 = **13**

5. 7 + 3 + 4 = **14**

6. 8 + 2 + 8 = **18**

7. 4 + 3 + 5 = **12**

8. 3 + 8 + 4 = **15**

9. 2 + 8 + 4 = **14**

10. 7 + 5 + 3 = **15**

11. 2 + 8 + 9 = **19**

12. 0 + 8 + 2 = **10**

13. 7 + 5 + 5 = **17**

14. 9 + 8 + 2 = **19**

15. 4 + 5 + 6 = **15**

16. 6 + 1 + 9 = **16**

17.
$$\begin{array}{r} 6 \\ 6 \\ +\ 6 \\ \hline \mathbf{18} \end{array}$$

18.
$$\begin{array}{r} 3 \\ 8 \\ +\ 7 \\ \hline \mathbf{18} \end{array}$$

19.
$$\begin{array}{r} 9 \\ 3 \\ +\ 5 \\ \hline \mathbf{17} \end{array}$$

20.
$$\begin{array}{r} 8 \\ 6 \\ +\ 2 \\ \hline \mathbf{16} \end{array}$$

21.
$$\begin{array}{r} 8 \\ 3 \\ +\ 9 \\ \hline \mathbf{20} \end{array}$$

22.
$$\begin{array}{r} 4 \\ 3 \\ +\ 9 \\ \hline \mathbf{16} \end{array}$$

23.
$$\begin{array}{r} 4 \\ 6 \\ +\ 5 \\ \hline \mathbf{15} \end{array}$$

24.
$$\begin{array}{r} 4 \\ 8 \\ +\ 4 \\ \hline \mathbf{16} \end{array}$$

25.
$$\begin{array}{r} 6 \\ 5 \\ 2 \\ +\ 1 \\ \hline \mathbf{14} \end{array}$$

26.
$$\begin{array}{r} 4 \\ 5 \\ 1 \\ +\ 0 \\ \hline \mathbf{10} \end{array}$$

27.
$$\begin{array}{r} 7 \\ 1 \\ 6 \\ +\ 3 \\ \hline \mathbf{17} \end{array}$$

28.
$$\begin{array}{r} 0 \\ 6 \\ 2 \\ +\ 4 \\ \hline \mathbf{12} \end{array}$$

29.
$$\begin{array}{r} 9 \\ 1 \\ 6 \\ +\ 3 \\ \hline \mathbf{19} \end{array}$$

30.
$$\begin{array}{r} 2 \\ 5 \\ 8 \\ +\ 3 \\ \hline \mathbf{18} \end{array}$$

Lesson 1.4: Adding Two-Digit Numbers

Introductory Video:

SCAN ME

Want to watch a video of this lesson?

https://youtu.be/mAvuom42NyY

When adding two-digit numbers put in columns so the place values are under the same place values. Add the ones, then the tens, then the hundreds, and on.

Student Example 1

Add: 35 + 6

SCAN ME

Want to watch a video of this lesson?

https://youtu.be/G1cNKc3PD74

Student Example 2

Add: 35 + 27

SCAN ME

Want to watch a video of this lesson?

https://youtu.be/8mcTsyV56jI

Exercise 1.4

1. $\begin{array}{r} {\scriptstyle 1}\,16 \\ +\ 4 \\ \hline 20 \end{array}$

2. $\begin{array}{r} {\scriptstyle 1}\,18 \\ +\ 5 \\ \hline 23 \end{array}$

3. $\begin{array}{r} 22 \\ +\ 7 \\ \hline 29 \end{array}$

4. $\begin{array}{r} {\scriptstyle 1}\,14 \\ +\ 9 \\ \hline 23 \end{array}$

5. $\begin{array}{r} {\scriptstyle 1}\,14 \\ +\ 8 \\ \hline 22 \end{array}$

6. $\begin{array}{r} {\scriptstyle 1}\,19 \\ +\ 9 \\ \hline 28 \end{array}$

7. $\begin{array}{r} {\scriptstyle 1}\,16 \\ +\ 7 \\ \hline 23 \end{array}$

8. $\begin{array}{r} {\scriptstyle 1}\,17 \\ +\ 7 \\ \hline 24 \end{array}$

9. $\begin{array}{r} {\scriptstyle 1}\,25 \\ +\ 7 \\ \hline 32 \end{array}$

10. $\begin{array}{r} {\scriptstyle 1}\,36 \\ +\ 7 \\ \hline 43 \end{array}$

11. $\begin{array}{r} {\scriptstyle 1}\,25 \\ +\ 8 \\ \hline 33 \end{array}$

12. $\begin{array}{r} {\scriptstyle 1}\,27 \\ +\ 9 \\ \hline 36 \end{array}$

13. $\begin{array}{r} 23 \\ +\ 16 \\ \hline 39 \end{array}$

14. $\begin{array}{r} 52 \\ +\ 34 \\ \hline 86 \end{array}$

15. $\begin{array}{r} 41 \\ +\ 54 \\ \hline 95 \end{array}$

16. $\begin{array}{r} 34 \\ +\ 55 \\ \hline 89 \end{array}$

17. $\begin{array}{r} {\scriptstyle 1}\,62 \\ +\ 29 \\ \hline 91 \end{array}$

18. $\begin{array}{r} {\scriptstyle 1}\,25 \\ +\ 55 \\ \hline 80 \end{array}$

19. $\begin{array}{r} {\scriptstyle 1}\,77 \\ +\ 14 \\ \hline 91 \end{array}$

20. $\begin{array}{r} {\scriptstyle 1}\,27 \\ +\ 39 \\ \hline 66 \end{array}$

21. $\begin{array}{r} {\scriptstyle 1}\,33 \\ +\ 47 \\ \hline 80 \end{array}$

22. $\begin{array}{r} 53 \\ +\ 35 \\ \hline 88 \end{array}$

23. $\begin{array}{r} {\scriptstyle 1}\,49 \\ +\ 44 \\ \hline 93 \end{array}$

24. $\begin{array}{r} {\scriptstyle 1}\,36 \\ +\ 64 \\ \hline 100 \end{array}$

25. $\begin{array}{r} {\scriptstyle 1}\,73 \\ +\ 28 \\ \hline 101 \end{array}$

26. $\begin{array}{r} {\scriptstyle 1}\,45 \\ +\ 35 \\ \hline 80 \end{array}$

27. $\begin{array}{r} {\scriptstyle 1}\,65 \\ +\ 57 \\ \hline 122 \end{array}$

28. $\begin{array}{r} {\scriptstyle 1}\,67 \\ +\ 47 \\ \hline 114 \end{array}$

29. $\begin{array}{r} {\scriptstyle 1}\,89 \\ +\ 31 \\ \hline 120 \end{array}$

30. $\begin{array}{r} 64 \\ +\ 83 \\ \hline 147 \end{array}$

31. $\begin{array}{r} {\scriptstyle 1}\,99 \\ +\ 22 \\ \hline 121 \end{array}$

32. $\begin{array}{r} {\scriptstyle 1}\,55 \\ +\ 77 \\ \hline 132 \end{array}$

33. $\begin{array}{r} {\scriptstyle 1} \\ 88 \\ +\ 44 \\ \hline 132 \end{array}$

34. $\begin{array}{r} {\scriptstyle 1} \\ 65 \\ +\ 36 \\ \hline 101 \end{array}$

35. $\begin{array}{r} {\scriptstyle 1} \\ 26 \\ +\ 84 \\ \hline 110 \end{array}$

36. $\begin{array}{r} {\scriptstyle 1} \\ 66 \\ +\ 58 \\ \hline 124 \end{array}$

37. $\begin{array}{r} \\ 72 \\ +\ 87 \\ \hline 159 \end{array}$

38. $\begin{array}{r} {\scriptstyle 1} \\ 56 \\ +\ 47 \\ \hline 103 \end{array}$

39. $\begin{array}{r} {\scriptstyle 1} \\ 78 \\ +\ 42 \\ \hline 120 \end{array}$

40. $\begin{array}{r} {\scriptstyle 1} \\ 55 \\ +\ 86 \\ \hline 141 \end{array}$

41. $\begin{array}{r} {\scriptstyle 1} \\ 76 \\ +\ 96 \\ \hline 172 \end{array}$

42. $\begin{array}{r} {\scriptstyle 1} \\ 93 \\ +\ 27 \\ \hline 120 \end{array}$

43. $\begin{array}{r} {\scriptstyle 1} \\ 69 \\ +\ 48 \\ \hline 117 \end{array}$

44. $\begin{array}{r} {\scriptstyle 1} \\ 97 \\ +\ 36 \\ \hline 133 \end{array}$

45. $\begin{array}{r} \\ 33 \\ 22 \\ +\ 42 \\ \hline 97 \end{array}$

46. $\begin{array}{r} \\ 21 \\ 41 \\ +\ 11 \\ \hline 73 \end{array}$

47. $\begin{array}{r} {\scriptstyle 1} \\ 36 \\ 24 \\ +\ 35 \\ \hline 95 \end{array}$

48. $\begin{array}{r} {\scriptstyle 1} \\ 48 \\ 42 \\ +\ 37 \\ \hline 127 \end{array}$

49. $\begin{array}{r} {\scriptstyle 1} \\ 63 \\ 55 \\ +\ 24 \\ \hline 142 \end{array}$

50. $\begin{array}{r} {\scriptstyle 1} \\ 73 \\ 38 \\ +\ 27 \\ \hline 138 \end{array}$

51. $\begin{array}{r} {\scriptstyle 1} \\ 96 \\ 53 \\ +\ 26 \\ \hline 175 \end{array}$

52. $\begin{array}{r} {\scriptstyle 1} \\ 84 \\ 56 \\ +\ 45 \\ \hline 185 \end{array}$

53. $\begin{array}{r} {\scriptstyle 2} \\ 23 \\ 69 \\ +\ 48 \\ \hline 140 \end{array}$

54. $\begin{array}{r} {\scriptstyle 2} \\ 57 \\ 69 \\ +\ 74 \\ \hline 200 \end{array}$

55. $\begin{array}{r} {\scriptstyle 1} \\ 85 \\ 49 \\ +\ 63 \\ \hline 197 \end{array}$

56. $\begin{array}{r} {\scriptstyle 2} \\ 57 \\ 68 \\ +\ 75 \\ \hline 200 \end{array}$

57. $\begin{array}{r} {\scriptstyle 1} \\ 88 \\ 75 \\ +\ 96 \\ \hline 259 \end{array}$

58. $\begin{array}{r} {\scriptstyle 2} \\ 76 \\ 57 \\ +\ 48 \\ \hline 181 \end{array}$

59. $\begin{array}{r} {\scriptstyle 1} \\ 84 \\ 56 \\ +\ 95 \\ \hline 235 \end{array}$

60. $\begin{array}{r} {\scriptstyle 2} \\ 96 \\ 57 \\ +\ 79 \\ \hline 232 \end{array}$

Lesson 1.5: Adding with Estimating

Learning Objectives

- Add two or more numbers with estimating and regrouping

Estimating Sums

To estimate an answer means to use rounded numbers in a calculation to get an idea of what the size of the actual answer should be.

Rule for Estimating Sums

1. Use front end rounding. Round each number to the place of the **left-most digit,** the numbers behind become zeros.

2. Add these rounded numbers.

Example 1

Add: 468 + 936 + 687

468 → 500
936 → 900
+ 687 → + 700

The given numbers rounded to the left-most digit.

2 100 ← The estimated sum.

468
936
+ 687
2 091 ← The actual sum is close to the estimated sum.

Example 2

24 642 → 20 000
445 → 400
9 261 → 9 000
+ 16 792 → + 20 000
49 400

The given numbers rounded to the left-most digit.

2 2 2 1
24 642
445
9 261
+ 16 792
51 140 ← The actual sum is close to the estimated sum.

Student Example 1

Estimate:

4 909 + 3 217

Want to watch a video of this lesson?
https://youtu.be/FmaLJJdMQdE

Student Example 2

Add:

37 + 725

Want to watch a video of this lesson?
https://youtu.be/N6OVX23Hvvk

Student Example 3

Add:

249 + 383

Want to watch a video of this lesson?
https://youtu.be/8TD6iDzt4oQ

Exercise 1.5

Solve the following. Use front-end rounding for the estimates.

	Estimate	Actual
1. 43 + 6	40 + 6 46	43 + 6 49
2. 57 + 8	60 + 8 68	$\overset{1}{5}\ 7$ + 8 6 5
3. 61 + 28	60 + 30 90	61 + 28 89
4. 32 + 45	30 + 50 80	32 + 45 77
5. 33 + 66	30 + 70 100	33 + 66 99
6. 37 + 34	40 + 30 70	$\overset{1}{3}7$ + 34 71

	Estimate	Actual
7. 45 + 55	50 + 60 110	$\overset{1}{4}5$ + 55 100
8. 36 + 79	40 + 80 120	$\overset{1}{3}6$ + 79 115
9. 87 + 34	90 + 30 120	$\overset{1}{8}7$ + 34 121
10. 95 + 28	100 + 30 130	$\overset{1}{9}5$ + 28 123
11. 652 + 43	700 + 40 740	652 + 43 695
12. 88 + 489	500 + 90 590	$\overset{1\ 1}{4}89$ + 88 577
13. 27 + 484	500 + 30 530	$\overset{1\ 1}{4}84$ + 27 511

	Estimate	Actual
14. 886 + 52	900 + 50 950	$\overset{1}{8}86$ + 52 938
15. 44 + 327	300 + 40 340	$3\overset{1}{2}7$ + 44 371
16. 764+ 977	800 + 1000 1800	$\overset{1\,1}{7}64$ + 977 1741
17. 240 + 264	200 + 300 600	$\overset{1}{2}40$ + 264 504
18. 666 + 753	700 + 800 1500	$\overset{1}{6}66$ + 753 1419
19. 925 + 489	900 + 500 1400	$\overset{1\,1}{9}25$ + 489 1414
20. 726 + 877	700 + 900 1600	$\overset{1\,1}{7}26$ + 877 1603

	Estimate	Actual
21. 2 499 + 889	2000 + 900 2900	$\overset{1\,1\,1}{2499}$ + 889 3388
22. 5 247 + 3 866	5000 + 4000 9000	$\overset{1\,1\,1}{5247}$ + 3866 9113
23. 5 467 + 2 567	5000 + 3000 8000	$\overset{1\,1\,1}{5467}$ + 2567 8034
24. 7 850 + 5 056	8000 + 5000 13000	$\overset{1}{7850}$ + 5056 12806
25. 59 475 + 4 808	60000 + 5000 65000	$\overset{1\,1}{5}\,9\,4\,\overset{1}{7}\,5$ + 4 8 0 8 6 4 2 8 3
26. 8 108 + 22 646	20000 + 8000 28000	$\overset{1}{2}\,2\,6\,\overset{1}{4}\,6$ + 8 1 0 8 3 0 7 5 4
27. 7 518 + 79 874	80000 + 8000 88000	$\overset{1\,1}{7}\,9\,8\,\overset{1}{7}\,4$ + 7 5 1 8 8 7 3 9 2

	Estimate	Actual
28. 65 + 47 + 36	70 50 + 40 160	$\overset{1}{6}5$ 47 + 36 148
29. 96 + 83 + 14	100 80 + 10 190	$\overset{1}{9}6$ 83 + 14 193
30. 267 + 477 + 83	300 500 + 80 880	$\overset{2\ 1}{2}67$ 477 + 83 827
31. 205+ 93 + 366	200 400 + 90 690	$\overset{1\ 1}{2}05$ 366 + 93 664
32. 817 + 375 + 449	800 400 + 400 1600	$\overset{1\ 2}{8}17$ 375 + 449 1641
33. 375 + 629 +772	400 600 + 800 1800	$\overset{1\ 1}{3}75$ 629 + 772 1776
34. 3 267 + 885 + 266	$\overset{1}{3}000$ 900 + 300 4200	$\overset{1\ 2\ 1}{3}267$ 885 + 266 4418

	Estimate	Actual
35. 6 452 + 8 506 + 217	6000 9000 + 200 15200	$\overset{1}{6}\ 4\ 5\ \overset{1}{2}$ 8 5 0 6 + 2 1 7 1 5 1 7 5
36. 7 442 + 5 808 + 782	7000 6000 + 800 13800	$\overset{2}{7}\ \overset{1}{4}\ \overset{1}{4}\ 2$ 5 8 0 8 + 7 8 2 1 4 0 3 2
37. 5 499 + 8 889 + 7 721	5000 9000 + 8000 22000	$\overset{2}{5}\ \overset{2}{4}\ \overset{1}{9}\ 9$ 8 8 8 9 + 7 7 2 1 2 2 1 0 9
38. 25 180 + 12 264 + 3 341	30000 10000 + 3000 43000	$\overset{1}{2}5\ 1\ 8\ 0$ 1 2 2 6 4 + 3 3 4 1 4 0 6 8 5

39. The distance from Edmonton to Red Deer is 154 kilometres. From Red Deer to Calgary, the distance is 146 kilometres. From Calgary to Lethbridge, the distance is 213 kilometres. How many kilometres apart are Edmonton and Lethbridge?

estimate
200
100
+ 200
500

actual
$\overset{1\ 1}{1}5\ 4$
146
+ 213
513

Edmonton and Lethbridge are 513 kilometres apart.

40. At the grocery store, Jamal buys oranges ($8), milk ($14), beef ($18), light bulbs ($16), and diapers ($57). How much does he spend altogether?

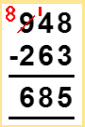
estimate
8
10
20
20
+ 60
118

actual
$\overset{3}{1}4$
8
18
16
+ 57
113

Jamal spent $113.

Unit 2: Subtraction

Keywords

Borrow	In subtraction, to take 1 from a digit of the first number (*minuend*) in order to add a 10 to the digit to the right of it. 
Difference	The *answer* or *result* of the subtraction. For example, 12 – 10 = ***2***
Inverse	Inverse operations is also called the opposite operations. Addition and subtraction are opposite operations. For example, 4 + 6 = 10 (addition) and 10 – 6 = 4 (subtraction)
Minus	Means to subtract. We say "seven minus four" which means 7 – 4
Subtraction	The process of taking one number or amount away from another

Lesson 2.1: Basic Subtraction Facts

Introductory Video:

SCAN ME

Want to watch a video of this lesson?

https://youtu.be/yBT7bsrFTnI

Addition and subtraction are opposite operations. We add two numbers to get the sum or total. We subtract two numbers to find the difference.

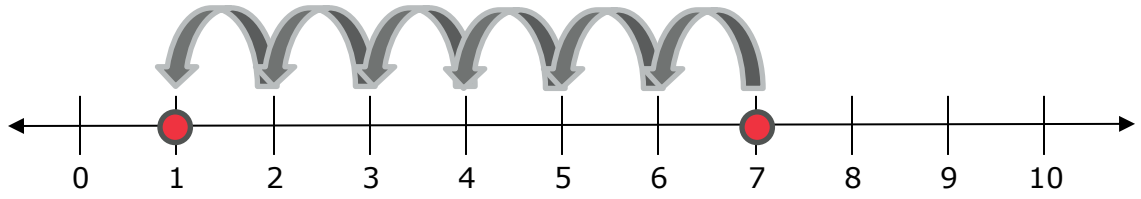
Order wasn't important when adding. **Order is important when subtracting. The largest number must always be first when subtracting whole numbers.**

This exercise is to practice your subtraction facts. We sometimes use backwards adding

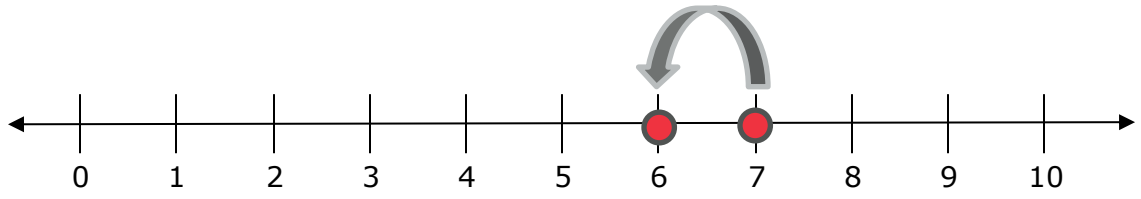
7 – 5 we might think ***what*** + 5 = 7 ***2*** + 5 = 7 so 7 – 5 = ***2***

Example:

7 – 6 = 1 Start at 7 and subtract 6



7 – 1 = 6 Start at 7 and subtract 1



Student Example 1

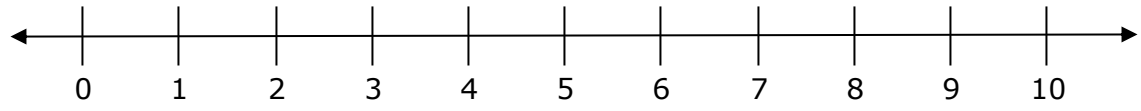
SCAN ME

Want to watch a video of this lesson?

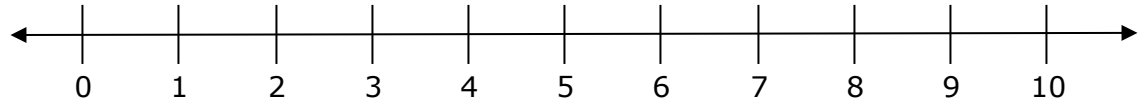
https://youtu.be/incKJchBCLo

Video for example 1 and 2

5 – 3 = 2



5 – 2 = 3



Student Example 2

7 – 4 =

Exercise 2.1

1. $\begin{array}{r} 3 \\ -\ 1 \\ \hline \mathbf{2} \end{array}$

2. $\begin{array}{r} 4 \\ -\ 1 \\ \hline \mathbf{3} \end{array}$

3. $\begin{array}{r} 6 \\ -\ 1 \\ \hline \mathbf{5} \end{array}$

4. $\begin{array}{r} 8 \\ -\ 1 \\ \hline \mathbf{7} \end{array}$

5. $5 - 2 = \mathbf{3}$

6. $7 - 3 = \mathbf{4}$

7. $8 - 5 = \mathbf{3}$

8. $5 - 3 = \mathbf{2}$

9. $\begin{array}{r} 4 \\ -\ 3 \\ \hline \mathbf{1} \end{array}$

10. $\begin{array}{r} 6 \\ -\ 2 \\ \hline \mathbf{4} \end{array}$

11. $\begin{array}{r} 9 \\ -\ 7 \\ \hline \mathbf{2} \end{array}$

12. $\begin{array}{r} 6 \\ -\ 5 \\ \hline \mathbf{1} \end{array}$

13. $9 - 3 = \mathbf{6}$

14. $8 - 4 = \mathbf{4}$

15. $7 - 2 = \mathbf{5}$

16. $6 - 3 = \mathbf{3}$

17. $\begin{array}{r} 5 \\ -\ 4 \\ \hline \mathbf{1} \end{array}$

18. $\begin{array}{r} 8 \\ -\ 4 \\ \hline \mathbf{4} \end{array}$

19. $\begin{array}{r} 8 \\ -\ 3 \\ \hline \mathbf{5} \end{array}$

20. $\begin{array}{r} 6 \\ -\ 5 \\ \hline \mathbf{1} \end{array}$

21. $3 - 3 = \mathbf{0}$

22. $4 - 2 = \mathbf{2}$

23. $7 - 1 = \mathbf{6}$

24. $9 - 9 = 0$

25. $\begin{array}{r} 6 \\ -\ 2 \\ \hline \mathbf{4} \end{array}$

26. $\begin{array}{r} 1 \\ -\ 1 \\ \hline \mathbf{0} \end{array}$

27. $\begin{array}{r} 8 \\ -\ 3 \\ \hline \mathbf{5} \end{array}$

28. $\begin{array}{r} 4 \\ -\ 1 \\ \hline \mathbf{3} \end{array}$

29. $\begin{array}{r} 9 \\ -\ 4 \\ \hline \mathbf{5} \end{array}$

30. $\begin{array}{r} 8 \\ -\ 6 \\ \hline \mathbf{2} \end{array}$

31. $\begin{array}{r} 9 \\ -\ 3 \\ \hline \mathbf{6} \end{array}$

32. $\begin{array}{r} 8 \\ -\ 7 \\ \hline \mathbf{1} \end{array}$

33. $\begin{array}{r} 7 \\ -\ 3 \\ \hline \mathbf{4} \end{array}$

34. $\begin{array}{r} 7 \\ -\ 2 \\ \hline \mathbf{5} \end{array}$

35. $\begin{array}{r} 5 \\ -\ 4 \\ \hline \mathbf{1} \end{array}$

36. $\begin{array}{r} 6 \\ -\ 6 \\ \hline \mathbf{0} \end{array}$

37. $\begin{array}{r} 1 \\ -\ 0 \\ \hline \mathbf{1} \end{array}$

38. $\begin{array}{r} 8 \\ -\ 1 \\ \hline \mathbf{7} \end{array}$

39. $\begin{array}{r} 7 \\ -\ 6 \\ \hline \mathbf{1} \end{array}$

40. $\begin{array}{r} 5 \\ -\ 2 \\ \hline \mathbf{3} \end{array}$

Lesson 2.2: Subtracting Without Borrowing

Introductory Video:

Want to watch a video of this lesson?

https://youtu.be/Y6M89-6106I

Watch video to 2:00

When subtracting make sure place values are lined up. If the numbers are beside each other put in column form.

Example	Solve: 86 – 52 86 **Arrange in columns. The larger number is always on top** – 52 **First subtract the Ones column:** 6 – 2 = 4 34 **Then subtract the Tens column:** 8 – 5 = 3

Student Example

Subtract: 65 – 23

Want to watch a video of this lesson?

https://youtu.be/slIX9EDcHgE

Exercise 2.2

1. 28 − 5 = **23**

2. 34 − 14 = **20**

3. 25 − 23 = **2**

4. 39 − 14 = **25**

5. 62 − 20 = **42**

6. 44 − 33 = **11**

7. 32 − 11 = **21**

8. 67 − 43 = **24**

9. 74 − 34 = **40**

10. 68 − 56 = **12**

11. 99 − 54 = **45**

12. 76 − 34 = **42**

13. 77 − 55 = **22**

14. 89 − 14 = **75**

15. 65 − 32 = **33**

16. 49 − 35 = **14**

17. 62 − 21 = **41**

18. 99 − 76 = **23**

19. 70 − 70 = **0**

20. 38 − 18 = **20**

21. 279 − 127 = **152**

22. 436 − 215 = **221**

23. 657 − 433 = **224**

24. 815 − 202 = **613**

25. 980 − 630 = **350**

26. 777 − 362 = **415**

27. 958 − 531 = **427**

28. 439 − 333 = **106**

29. 2 685 − 1 274 = **1411**

30. 7 795 − 4 582 = **3213**

31. 8 273 − 6 261 = **2012**

32. 5 007 − 3 004 = **2003**

Lesson 2.3: Subtracting With Borrowing

Introductory Video:

SCAN ME

Want to watch a video of this lesson?

https://youtu.be/Y6M89-6106I

Watch video from 2:00

When subtracting make sure place values are lined up. If the numbers are beside each other put in column form.

Example 1	Solve: 71 – 32 $\begin{array}{r} {}^{6}\not{7}^{1}1 \\ -\,3\,2 \\ \hline 3\,9 \end{array}$ **Ones column:** 1 – 2, can't do it! Borrow 1 from the hundreds column (it is reduced from 7 to 6) and increase the tens column from 1 to 11. Now subtract: 11 – 2 = 9 **Tens column:** 6 – 3 = 3 (Remember, the 7 was borrowed from, so it is now 6!)
Example 2	**Borrowing more than once** Sometimes it is necessary to borrow more than once in order to find the difference. Solve: 637 – 549 $\begin{array}{r} 6\,{}^{2}\not{3}^{1}7 \\ -\,5\,4\,9 \\ \hline \end{array}$ **Ones column:** We cannot take 9 from 7, so we borrow from the tens column to get 17. Now we can subtract 9 from 17. $\begin{array}{r} {}^{5}\not{6}\ {}^{12}\not{3}^{1}7 \\ -\,5\,4\,9 \\ \hline 8\,8 \end{array}$ **Tens column:** We cannot subtract 4 tens from 2 tens, so we borrow again. Borrow 1 from the hundreds column to make 12 in the tens column and complete the subtraction to find the difference.
Example 3	Solve: 7 000 – 542 $\begin{array}{r} {}^{6}\not{7}^{1}\ {}^{9}\not{0}^{1}\ {}^{9}\not{0}^{1}0 \\ -\,5\,4\,2 \\ \hline 6\,4\,5\,8 \end{array}$ → Difference We cannot borrow from zero so we must borrow from 7 000.

Student Example 1

Subtract: 83 – 25

Want to watch a video of this lesson?
https://youtu.be/egjDLFX9VHg

Student Example 2

Subtract: 312 – 189

Want to watch a video of this lesson?
https://youtu.be/QD86addRZEw

Student Example 3

Subtract: 389 002 – 76 151

Want to watch a video of this lesson?
https://youtu.be/buyK1y4rV3E

Exercise 2.3

1. $\begin{array}{r} 15 \\ -\ 7 \\ \hline 8 \end{array}$

2. $\begin{array}{r} 34 \\ -\ 8 \\ \hline 26 \end{array}$

3. $\begin{array}{r} {\scriptstyle 1}\not{2}\,{}^{1}5 \\ -\ 1\ 6 \\ \hline 9 \end{array}$

4. $\begin{array}{r} {\scriptstyle 2}\not{3}\,{}^{1}2 \\ -\ 1\ 7 \\ \hline 1\ 5 \end{array}$

5. $\begin{array}{r} {\scriptstyle 5}\not{6}\,{}^{1}2 \\ -\ 2\ 7 \\ \hline 3\ 5 \end{array}$

6. $\begin{array}{r} {\scriptstyle 3}\not{4}\,{}^{1}1 \\ -\ 3\ 3 \\ \hline 8 \end{array}$

7. $\begin{array}{r} {\scriptstyle 2}\not{3}\,{}^{1}3 \\ -\ 1\ 4 \\ \hline 1\ 9 \end{array}$

8. $\begin{array}{r} {\scriptstyle 6}\not{7}\,{}^{1}2 \\ -\ 4\ 5 \\ \hline 2\ 7 \end{array}$

9. $\begin{array}{r} {\scriptstyle 6}\not{7}\,{}^{1}0 \\ -\ 3\ 6 \\ \hline 3\ 4 \end{array}$

10. $\begin{array}{r} {\scriptstyle 7}\not{8}\,{}^{1}5 \\ -\ 5\ 6 \\ \hline 2\ 9 \end{array}$

11. $\begin{array}{r} {\scriptstyle 8}\not{9}\,{}^{1}2 \\ -\ 7\ 4 \\ \hline 1\ 8 \end{array}$

12. $\begin{array}{r} {\scriptstyle 5}\not{8}\,{}^{1}3 \\ -\ 3\ 9 \\ \hline 2\ 4 \end{array}$

13. $\begin{array}{r} {\scriptstyle 6}\not{7}\,{}^{1}7 \\ -\ 5\ 9 \\ \hline 1\ 8 \end{array}$

14. $\begin{array}{r} {\scriptstyle 2}\not{3}\,{}^{1}1 \\ -\ 1\ 4 \\ \hline 1\ 7 \end{array}$

15. $\begin{array}{r} {\scriptstyle 5}\not{6}\,{}^{1}5 \\ -\ 3\ 8 \\ \hline 2\ 7 \end{array}$

16. $\begin{array}{r} {\scriptstyle 3}\not{4}\,{}^{1}5 \\ -\ 3\ 7 \\ \hline 8 \end{array}$

17. $\begin{array}{r} {\scriptstyle 5}\not{6}\,{}^{1}2 \\ -\ 2\ 8 \\ \hline 3\ 4 \end{array}$

18. $\begin{array}{r} {\scriptstyle 8}\not{9}\,{}^{1}2 \\ -\ 7\ 6 \\ \hline 1\ 6 \end{array}$

19. $\begin{array}{r} {\scriptstyle 7}\not{8}\,{}^{1}0 \\ -\ 7\ 3 \\ \hline 7 \end{array}$

20. $\begin{array}{r} {\scriptstyle 3}\not{4}\,{}^{1}8 \\ -\ 1\ 9 \\ \hline 2\ 9 \end{array}$

21. $\begin{array}{r} 3{\scriptstyle 7}\not{8}\,{}^{1}5 \\ -\ 1\ 2\ 7 \\ \hline 2\ 5\ 8 \end{array}$

22. $\begin{array}{r} {\scriptstyle 5}\not{6}\,{}^{1}2\ 7 \\ -\ 2\ 4\ 5 \\ \hline 3\ 8\ 2 \end{array}$

23. $\begin{array}{r} {\scriptstyle 6}\not{7}\,{}^{1}2\ 7 \\ -\ 4\ 6\ 4 \\ \hline 2\ 6\ 3 \end{array}$

24. $\begin{array}{r} {\scriptstyle 7}\not{8}\ {\scriptstyle 10}\not{1}\,{}^{1}5 \\ -\ 2\ 4\ 6 \\ \hline 5\ 6\ 9 \end{array}$

25. $\begin{array}{r} {\scriptstyle 7}\not{8}\,{}^{1}0\ 2 \\ -\ 7\ 6\ 0 \\ \hline 4\ 2 \end{array}$

26. $\begin{array}{r} {\scriptstyle 3}\not{4}\,{}^{1}0\ 8 \\ -\ 2\ 8\ 5 \\ \hline 1\ 2\ 3 \end{array}$

27. $\begin{array}{r} {\scriptstyle 8}\not{9}\ {\scriptstyle 9}\not{0}\,{}^{1}0 \\ -\ 5\ 6\ 9 \\ \hline 3\ 3\ 1 \end{array}$

28. $\begin{array}{r} {\scriptstyle 4}\not{5}\ {\scriptstyle 9}\not{0}\,{}^{1}0 \\ -\ 1\ 6\ 8 \\ \hline 3\ 3\ 2 \end{array}$

29. $\begin{array}{r} 3485 \\ -\ 1374 \\ \hline 2111 \end{array}$

30. $\begin{array}{r} 6{\scriptstyle 2}\not{3}\,{}^{1}7\ 5 \\ -\ 3\ 2\ 8\ 3 \\ \hline 3\ 0\ 9\ 2 \end{array}$

31. $\begin{array}{r} {\scriptstyle 8}\not{9}\ {\scriptstyle 9}\not{0}\ {\scriptstyle 16}\not{7}\,{}^{1}3 \\ -\ 5\ 2\ 9\ 5 \\ \hline 3\ 7\ 7\ 8 \end{array}$

32. $\begin{array}{r} {\scriptstyle 4}\not{5}\ {\scriptstyle 9}\not{0}\ {\scriptstyle 9}\not{0}\,{}^{1}0 \\ -\ 3\ 0\ 8\ 7 \\ \hline 1\ 9\ 1\ 3 \end{array}$

33. $\begin{array}{r} {\scriptstyle 6}\not{7}\ {\scriptstyle 9}\not{0}\ {\scriptstyle 9}\not{0}\,{}^{1}0 \\ -\ 4\ 9\ 9\ 9 \\ \hline 2\ 0\ 0\ 1 \end{array}$

34. $\begin{array}{r} {\scriptstyle 5}\not{6}\ {\scriptstyle 9}\not{0}\ {\scriptstyle 9}\not{0}\,{}^{1}0 \\ -\ 3\ 0\ 3\ 4 \\ \hline 2\ 9\ 6\ 6 \end{array}$

35. $\begin{array}{r} {\scriptstyle 7}\not{8}\ {\scriptstyle 9}\not{0}\ {\scriptstyle 13}\not{4}\,{}^{1}0 \\ -\ 3\ 8\ 5\ 7 \\ \hline 4\ 1\ 8\ 3 \end{array}$

36. $\begin{array}{r} {\scriptstyle 4}\not{5}\ {\scriptstyle 9}\not{0}\ {\scriptstyle 9}\not{0}\,{}^{1}2 \\ -\ 4\ 2\ 6\ 7 \\ \hline 7\ 3\ 5 \end{array}$

Lesson 2.4: Subtraction with Estimating

Rule for Estimating Differences

1. Use front end rounding. Round each number to the place of the **left-most digit**.
2. Subtract these rounded numbers.

Example 1 Subtract: 896 – 685

896 →	900 ←	The given numbers rounded to the left-most digit.
– 685 →	– 700 ←	
	200 ←	The estimated difference.

896
– 685
211 ← The actual difference is close to the estimated difference.

Student Example 1

Estimate using front end rounding:

6 325 – 1 578

Want to watch a video of this lesson?
https://youtu.be/s0cUAaT1HIU

Student Example 2

Estimate using front end rounding:

8 000 – 3 362

Exercise 2.4

Solve the following. Put in columns and use front-end rounding for the estimates. Then complete the calculations.

	Estimate	Actual
1. 28 – 6	$\begin{array}{r} \overset{2}{\cancel{3}}\,^{1}0 \\ -\ \ 6 \\ \hline 2\ 4 \end{array}$	$\begin{array}{r} 28 \\ -\ \ 6 \\ \hline 22 \end{array}$
2. 65 – 4	$\begin{array}{r} \overset{6}{\cancel{7}}\,^{1}0 \\ -\ \ 4 \\ \hline 6\ 6 \end{array}$	$\begin{array}{r} 65 \\ -\ \ 4 \\ \hline 61 \end{array}$
3. 34 – 9	$\begin{array}{r} \overset{2}{\cancel{3}}\,^{1}0 \\ -\ \ 9 \\ \hline 2\ 1 \end{array}$	$\begin{array}{r} \overset{2}{\cancel{3}}\,^{1}4 \\ -\ \ 9 \\ \hline 2\ 5 \end{array}$
4. 72 – 5	$\begin{array}{r} \overset{6}{\cancel{7}}\,^{1}0 \\ -\ \ 5 \\ \hline 6\ 5 \end{array}$	$\begin{array}{r} \overset{6}{\cancel{7}}\,^{1}2 \\ -\ \ 5 \\ \hline 6\ 7 \end{array}$
5. 49 – 36	$\begin{array}{r} 50 \\ -\ 10 \\ \hline 10 \end{array}$	$\begin{array}{r} 49 \\ -\ 36 \\ \hline 13 \end{array}$
6. 87 – 31	$\begin{array}{r} 90 \\ -\ 30 \\ \hline 60 \end{array}$	$\begin{array}{r} 87 \\ -\ 31 \\ \hline 56 \end{array}$

	Estimate	Actual
7. 22 – 18	20 - 20 0	$\not{2}^{1}2$ - 1 8 4
8. 65 – 37	60 - 40 20	$\not{6}^{1}5$ - 3 7 2 8
9. 72 – 48	70 - 50 20	$\not{7}^{1}2$ - 4 8 2 4
10. 30 – 19	30 - 20 10	$\not{3}^{1}0$ - 1 9 1 1
11. 62 – 27	60 - 30 30	$\not{6}^{1}2$ - 2 7 3 5
12. 80 – 42	80 - 40 40	$\not{8}^{1}0$ - 4 2 3 8
13. 50 – 37	50 - 40 10	$\not{5}^{1}0$ - 3 7 1 3

	Estimate	Actual
14. 90 – 59	90 - 60 30	$\cancel{9}^{\,8}\,^{1}0$ - 5 9 3 1
15. 849 – 25	$\cancel{8}^{\,7}\,^{1}0\ 0$ - 3 0 7 7 0	8 4 9 - 2 5 8 2 4
16. 961 – 41	$\cancel{1}\,\cancel{0}^{\,9}\,^{1}0\ 0$ - 4 0 9 6 0	9 6 1 - 4 1 9 2 0
17. 455 – 37	$\cancel{5}^{\,4}\,^{1}0\ 0$ - 4 0 4 6 0	$4\ \cancel{5}^{\,4}\,^{1}5$ - 3 7 4 1 8
18. 327 – 63	$\cancel{3}^{\,2}\,^{1}0\ 0$ - 6 0 2 4 0	$\cancel{3}^{\,2}\,^{1}2\ 7$ - 6 3 2 6 4
19. 911 – 88	$\cancel{9}^{\,8}\,^{1}0\ 0$ - 9 0 8 1 0	$\cancel{9}^{\,8}\,\cancel{1}^{\,14}\,^{1}1$ - 8 8 8 6 3
20. 459 – 264	5 0 0 - 3 0 0 2 0 0	$\cancel{4}^{\,3}\ ^{1}5\ 9$ - 2 6 4 1 9 5

	Estimate	Actual
21. 918 – 627	9 0 0 - 6 0 0 3 0 0	$\not{9}^{8}$ ${}^{1}1$ 8 - 6 2 7 2 9 1
22. 836 – 399	8 0 0 - 4 0 0 4 0 0	$\not{8}^{7}$ ${}^{1}\not{3}^{2}$ ${}^{1}6$ - 3 9 9 4 3 7
23. 607 – 352	6 0 0 - 4 0 0 2 0 0	$\not{8}^{7}$ ${}^{1}\not{3}^{2}$ ${}^{1}6$ - 3 9 9 4 3 7
24. 720 – 408	7 0 0 - 4 0 0 3 0 0	$\not{8}^{7}$ ${}^{1}\not{3}^{2}$ ${}^{1}6$ - 3 9 9 4 3 7
25. 900 – 325	9 0 0 - 3 0 0 6 0 0	$\not{9}^{8}$ $\not{0}^{9}$ ${}^{1}0$ - 3 2 5 5 7 5
26. 1 299 – 587	1 0 0 0 - 6 0 0 4 0 0	1 2 9 9 - 5 8 7 7 1 2
27. 5 637 – 674	$\not{6}^{5}$ ${}^{1}0$ 0 0 - 7 0 0 5 3 0 0	$\not{5}^{4}$ $\not{6}^{15}$ ${}^{1}3$ 7 - 6 7 4 4 9 6 3

	Estimate	Actual
28. 4 239 – 747	$\begin{array}{r} \cancel{4}^{\,3}\,{}^{1}0\,0\,0 \\ -\quad 7\,0\,0 \\ \hline 3\,3\,0\,0 \end{array}$	$\begin{array}{r} \cancel{4}^{\,3}\,\cancel{2}^{\,11}\,{}^{1}3\,9 \\ -\quad 7\,4\,7 \\ \hline 3\,4\,9\,2 \end{array}$
29. 6 300 – 532	$\begin{array}{r} \cancel{6}^{\,5}\,{}^{1}0\,0\,0 \\ -\quad 5\,0\,0 \\ \hline 5\,5\,0\,0 \end{array}$	$\begin{array}{r} \cancel{6}^{\,5}\,\cancel{3}^{\,12}\,\cancel{0}^{\,9}\,{}^{1}0 \\ -\quad 5\,3\,2 \\ \hline 5\,7\,6\,8 \end{array}$
30. 4 000 – 967	$\begin{array}{r} 4\,0\,0\,0 \\ -\quad 1\,0\,0\,0 \\ \hline 3\,0\,0\,0 \end{array}$	$\begin{array}{r} \cancel{4}^{\,3}\,\cancel{0}^{\,9}\,\cancel{0}^{\,9}\,{}^{1}0 \\ -\quad 9\,6\,7 \\ \hline 3\,0\,3\,3 \end{array}$
31. 4 614 – 2 837	$\begin{array}{r} 5\,0\,0\,0 \\ -\quad 3\,0\,0\,0 \\ \hline 2\,0\,0\,0 \end{array}$	$\begin{array}{r} \cancel{4}^{\,3}\,\cancel{6}^{\,15}\,\cancel{1}^{\,10}\,{}^{1}4 \\ -\quad 2\,8\,3\,7 \\ \hline 1\,7\,7\,7 \end{array}$
32. 6 007 – 1 706	$\begin{array}{r} 6\,0\,0\,0 \\ -\quad 2\,0\,0\,0 \\ \hline 4\,0\,0\,0 \end{array}$	$\begin{array}{r} \cancel{6}^{\,5}\,{}^{1}0\,0\,7 \\ -\quad 1\,7\,0\,6 \\ \hline 4\,3\,0\,1 \end{array}$
33. 4 713 – 2 192	$\begin{array}{r} 5\,0\,0\,0 \\ -\quad 2\,0\,0\,0 \\ \hline 3\,0\,0\,0 \end{array}$	$\begin{array}{r} 4\,\cancel{7}^{\,6}\,{}^{1}1\,3 \\ -\quad 2\,1\,9\,2 \\ \hline 2\,5\,2\,1 \end{array}$
34. 6 000 – 4 974	$\begin{array}{r} 6\,0\,0\,0 \\ -\quad 5\,0\,0\,0 \\ \hline 1\,0\,0\,0 \end{array}$	$\begin{array}{r} \cancel{6}^{\,5}\,\cancel{0}^{\,9}\,\cancel{0}^{\,9}\,{}^{1}0 \\ -\quad 4\,9\,7\,4 \\ \hline 1\,0\,2\,6 \end{array}$

	Estimate	Actual
35. 24 753 – 7 182	$\begin{array}{r} \cancel{2}^{\,1}0\,0\,0\,0 \\ -\ 7\,0\,0\,0 \\ \hline 1\,3\,0\,0\,0 \end{array}$	$\begin{array}{r} \cancel{2}^{\,1}\cancel{4}^{\,6}\,\cancel{7}^{\,1}5\ 3 \\ -\ 7\,1\,8\,2 \\ \hline 1\,7\,5\,7\,1 \end{array}$
36. 35 963 – 7 275	$\begin{array}{r} \cancel{4}^{\,3}\,^{1}0\,0\,0\,0 \\ -\ 7\,0\,0\,0 \\ \hline 3\,3\,0\,0\,0 \end{array}$	$\begin{array}{r} \cancel{3}^{\,2}\,^{1}5\,\cancel{9}^{\,8}\,\cancel{6}^{\,15}\,^{1}3 \\ -\ 7\,2\,7\,5 \\ \hline 2\,8\,6\,8\,8 \end{array}$
37. 74 003 – 9 456	$\begin{array}{r} \cancel{7}^{\,6}\,^{1}0\,0\,0\,0 \\ -\ 9\,0\,0\,0 \\ \hline 6\,1\,0\,0\,0 \end{array}$	$\begin{array}{r} \cancel{7}^{\,6}\,\cancel{4}^{\,13}\,\cancel{0}^{\,9}\,\cancel{0}^{\,9}\,^{1}3 \\ -\ 9\,4\,5\,6 \\ \hline 6\,4\,5\,4\,7 \end{array}$
38. 20 000 – 16 694	$\begin{array}{r} 2\,0\,0\,0\,0 \\ -\ 2\,0\,0\,0\,0 \\ \hline 0 \end{array}$	$\begin{array}{r} \cancel{2}^{\,1}\cancel{0}^{\,9}\,\cancel{0}^{\,9}\,\cancel{0}^{\,9}\,^{1}0 \\ -\ 1\,6\,6\,9\,4 \\ \hline 3\,3\,0\,6 \end{array}$

39. Jamal had $1 253 in his bank account. He spent $739 on a new bicycle. How much is left in his bank account.

estimate $\begin{array}{r} 1\,0\,0\,0 \\ -\ 7\,0\,0 \\ \hline 5\,0\,0 \end{array}$ actual $\begin{array}{r} 1\,2\,\cancel{5}^{\,4}\,^{1}3 \\ -\ 7\,3\,9 \\ \hline 5\,1\,4 \end{array}$ Jamal has $514 left in his bank account

40. Jessica's salary increased by $2 550 this year. If her new salary is $37 400, how much was her old salary?

estimate $\begin{array}{r} \cancel{4}^{\,3}\,^{1}0\,0\,0\,0 \\ -\ 3\,0\,0\,0 \\ \hline 3\,7\,0\,0\,0 \end{array}$ actual $\begin{array}{r} 3\,\cancel{7}^{\,6}\,\cancel{4}^{\,13}\,^{1}0\ 0 \\ -\ 2\,5\,5\,0 \\ \hline 3\,4\,8\,5\,0 \end{array}$ Jessica's old salary was $34 850.

Lesson 2.5: Addition and Subtraction Word Problems

Learning Objectives

- Solve application problems using addition and subtraction

Keywords

Addition	Subtraction	Equals
plus	less	is
more	subtract	the same as
more than	subtracted from	equals
added to	difference	equals to
increased by	less than	yields
sum	fewer	results in
total	decreased by	are
sum of	loss of	
increase of	minus	
gain of	take away	
add		

Steps for Solving Word Problems

1. Read the problem carefully to ensure that you understand what is being asked. You may need to read the problem several times.
2. Decide what to do to solve the problem.
3. Write a number sentence to show how you would arrive at the answer.
4. Estimate using front end rounding, to determine if the answer is reasonable. If it is, calculate. If not, choose another operation and estimate again.
5. Calculate.
6. Write the final answer in a clear, concise sentence using the appropriate units.

Example 1: Addition

Sarah earned $56 on Monday, $34 on Tuesday, and $112 on Wednesday. How much were her combined earnings?

Solution:

Number sentence	Estimate	Calculation	Answer in sentence form
56 + 34 + 112	60 30 + 100 190	56 34 + 112 202	Sarah's combined earnings were $202.

Example 2: Subtraction

Last year, it snowed only 857 millimetres in Edmonton, but it snowed 2 648 millimetres in Montreal. How much less did it snow in Edmonton?

Solution:

Number sentence	Estimate	Calculation	Answer in sentence form
2 648 – 857	3 000 – 900 2 100	2 648 – 857 1 791	It snowed 1 791 mm less in Edmonton.

Student Example 1

Aya recycled 277 kilograms of paper and 134 kilograms of aluminum. What is the total kilograms of paper and aluminum that she recycled?

SCAN ME

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https://youtu.be/W3zji0qh658

Student Example 2

A farmer grows five hundred thirty-one tomatoes. In three days he sells one hundred seventy-six tomatoes. How many does he have left at the end of three days?

SCAN ME

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https://youtu.be/QY8vv7eVVJE

Exercise 2.5

Complete the following word problems. Remember to write your answers in sentence form.

1. In Edmonton, the temperature is 3 degrees at night. During the day, the temperature is 18 degrees higher. What is the daytime temperature?

   3+18 =21
   The day time temperature is 21 degrees.

2. This morning, you drove 223 kilometres. In the afternoon you drove another 198 kilometres. How many kilometres have you driven so far.

estimate
$$\begin{array}{r} 200 \\ +\ 200 \\ \hline 400 \end{array}$$
actual
$$\begin{array}{r} {\scriptstyle 1\ 1\ \ } \\ 223 \\ +\ 198 \\ \hline 421 \end{array}$$
You will have drive 421 kilometres.

3. Heather buys 12 metres of plastic edging for her yard. She puts 7 metres of edging around a tree. How much edging does she have left?

   12 – 7 =5 Heather has 5 metres of edging left.

4. Mona was born in 1983. How old will she be on her birthday in 2020?

$$\begin{array}{r} {\scriptstyle 1\ 9\ 11\ \ } \\ \not{2}\ \not{0}\ \not{2}\ {\scriptstyle 1}0 \\ -\ 1\ 9\ 8\ 3 \\ \hline 3\ 7 \end{array}$$
Mona will be 37 on her birthday.

5. A few years ago, Red Deer's population was 62 887. Lethbridge's population was 34 637. How many people live in the two cities combined?

estimate
$$\begin{array}{r} 60000 \\ +\ 30000 \\ \hline 90000 \end{array}$$
actual
$$\begin{array}{r} {\scriptstyle 1\ 1\ 1\ \ } \\ 62\,887 \\ +\ 34\,637 \\ \hline 97\,524 \end{array}$$
There are 97 524 people who live in the two cities combined.

6. You are planning a trip to the mountains. Starting from Edmonton, you must drive 156 km to Red Deer, then 143 km to Calgary, then 103 km to Canmore. What is the total driving distance?

estimate

$$\begin{array}{r} 200 \\ 100 \\ +\ 100 \\ \hline 400 \end{array}$$

Actual

$$\begin{array}{r} {}^{1\,1} \\ 156 \\ 143 \\ +\ 103 \\ \hline 402 \end{array}$$

The total driving distance is 402 kilometres.

7. At the Edmonton Oilers hockey game on Wednesday night 15 283 people attended. Halfway through the third period, the Oilers were losing badly and 1 836 fans left the game. How many fans were still present?

estimate

$$\begin{array}{r} \overset{1}{\cancel{2}}\,{}^{1}0000 \\ -\ 2000 \\ \hline 18000 \end{array}$$

actual

$$\begin{array}{r} 1\ \overset{4}{\cancel{5}}\ {}^{1}2\ \overset{7}{\cancel{8}}\ {}^{1}3 \\ -\ \ 1\ 8\ 3\ 6 \\ \hline 1\ 3\ 4\ 4\ 7 \end{array}$$

There are still 13 447 fans at the game.

8. Ben ordered 12 000 nails for a house construction project. So far, he has used 7 413 nails. How many nails are left?

estimate

$$\begin{array}{r} 10000 \\ -\ 7000 \\ \hline 5000 \end{array}$$

actual

$$\begin{array}{r} 1\overset{1}{\cancel{2}}\,\overset{9}{\cancel{0}}\,\overset{9}{\cancel{0}}\,{}^{1}0 \\ -\ \ 7\ 4\ 1\ 3 \\ \hline 4\ 5\ 8\ 7 \end{array}$$

Ben has 4 587 nails left.

9. Lori is going to buy groceries and has $140 with her. On the way to the grocery store, she spends $15 on cookies and $12 for parking. How much money does she have left for groceries?

$$\begin{array}{r} 1\overset{3}{\cancel{4}}\,{}^{1}0 \\ -\ \ 1\ 5 \\ \hline 1\ 2\ 5 \end{array}$$

$$\begin{array}{r} 125 \\ -\ 12 \\ \hline 113 \end{array}$$

Lori has $113 left for groceries.

10. On a long weekend you decide to take your family on a trip to Jasper. The distance from Edmonton to Jasper is 364 km. You leave Edmonton at 7:00 a.m. and at 9:30 a.m. you have traveled 188 km. How much farther do you need to go to get to Jasper?

Estimate

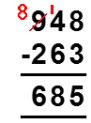
$$\begin{array}{r} 400 \\ -\ 200 \\ \hline 200 \end{array}$$

actual

$$\begin{array}{r} \overset{2}{\cancel{3}}\ \overset{15}{\cancel{6}}\,{}^{1}4 \\ -\ 1\ \ 8\ 8 \\ \hline 1\ 7\ 6 \end{array}$$

You have 176 kilometres left to go.

Glossary for this Module

Adding/ Addition	To join something to something else to increase the size, number, or amount. In an equation, this is indicated by the "+" sign.
Borrow	In subtraction, to take 1 from a digit of the first number (*minuend*) in order to add a 10 to the digit to the right of it. 
Carry	To transfer a digit from one column of digits to another column of digits
Difference	The *answer* or *result* of the subtraction. For example, 12 – 10 = ***2***
Equation	A statement that the values of two mathematical expressions are equal (indicated by the "=" sign)
Inverse	Inverse operations is also called the opposite operations. Addition and subtraction are opposite operations. For example, 4 + 6 = 10 (addition) and 10 – 6 = 4 (subtraction)
Minus	Means to subtract. We say "seven minus four" which means 7 – 4
Operation	A single math task. Adding is an operation, and so are subtracting, multiplying, and dividing
Subtraction	The process of taking one number or amount away from another
Sum	The answer to an adding equation; also known as the **total**
Total	The answer to an adding equation; also known as the **sum**

Answer Key

Unit 1: Addition

Exercise 1.1

3. 0 + 3
   1 + 2

4. 0 + 4
   1 + 3
   2 + 2

5. 0 + 5
   1 + 4
   2 + 3

6. 0 + 6
   1 + 5
   2 + 4
   3 + 3

7. 0 + 7
   1 + 6
   2 + 5
   3 + 4

8. 0 + 8
   1 + 7
   2 + 6
   3 + 5
   4 + 4

9. 0 + 9
   1 + 8
   2 + 7
   3 + 6
   4 + 5

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

11. 2 + 9
    3 + 8
    4 + 7
    5 + 6

12. 3 + 9
    4 + 8
    5 + 7
    6 + 6

13. 4 + 9
    5 + 8
    6 + 7

14. 5 + 9
    6 + 8
    7 + 7

15. 6 + 9
    7 + 8

16. 7 + 9
    8 + 8

17. 8 + 9

18. 9 + 9

Exercise 1.2

1. 7	2. 6	3. 9	4. 5	5. 3	6. 6
7. 8	8. 7	9. 9	10. 6	11. 5	12. 9
13. 4	14. 7	15. 4	16. 6	17. 7	18. 8
19. 9	20. 7	21. 8	22. 9	23. 6	24. 9
25. 9	26. 8	27. 8	28. 9	29. 10	30. 11
31. 13	32. 15	33. 14	34. 11	35. 12	36. 14
37. 16	38. 11	39. 16	40. 13	41. 11	42. 15
43. 14	44. 10	45. 12	46. 14	47. 16	48. 14
49. 13	50. 14	51. 11	52. 18	53. 17	54. 10
55. 15	56. 17	57. 11	58. 12	59. 11	60. 13

Exercise 1.3

1. 9	2. 9	3. 8	4. 13	5. 14	6. 18
7. 12	8. 15	9. 14	10. 15	11. 19	12. 10
13. 17	14. 19	15. 15	16. 16	17. 18	18. 18
19. 17	20. 16	21. 20	22. 16	23. 15	24. 16
25. 14	26. 10	27. 17	28. 12	29. 19	30. 18

Exercise 1.4

1. 20	2. 23	3. 29	4. 23	5. 22	6. 28
7. 23	8. 24	9. 32	10. 43	11. 33	12. 36
13. 39	14. 86	15. 95	16. 89	17. 91	18. 80
19. 91	20. 66	21. 80	22. 88	23. 92	24. 100
25. 101	26. 80	27. 122	28. 114	29. 120	30. 147
31. 121	32. 132	33. 132	34. 101	35. 130	36. 124
37. 159	38. 103	39. 120	40. 141	41. 172	42. 120
43. 117	44. 133	45. 97	46. 73	47. 95	48. 127
49. 142	50. 138	51. 175	52. 185	53. 140	54. 200
55. 197	56. 200	57. 259	58. 181	59. 235	60. 232

Exercise 1.5

	Estimate	Actual
1.	46	49
3.	90	89
5.	90	99
7.	100	100
9.	120	121
11.	740	695
13.	530	511
15.	340	371
17.	500	504
19.	1 400	1 414
21.	2 900	3 388

	Estimate	Actual
2.	68	65
4.	80	77
6.	70	71
8.	120	115
10.	130	123
12.	590	577
14.	950	938
16.	1 800	1 741
18.	1 500	1 419
20.	1 600	1 603
22.	9 000	9 113

	Estimate	Actual
23.	8 000	8 034
25.	65 000	64 283
27.	88 000	87 392
29.	190	193
31.	690	664
33.	1 800	1 776
35.	15 200	15 175
37.	22 000	22 109

	Estimate	Actual
24.	13 000	12 906
26.	28 000	30 754
28.	150	148
30.	880	827
32.	1 600	1 641
34.	4 200	4 418
36.	13 800	14 032
38.	43 000	40 785

39. Edmonton and Lethbridge are 513 kilometres apart.

40. Jamal spends $113 at the grocery store.

Unit 2: Subtraction

Exercise 2.1

1. 2	2. 3	3. 5	4. 7	5. 3
6. 4	7. 3	8. 2	9. 1	10. 4
11. 2	12. 1	13. 6	14. 4	15. 5
16. 3	17. 1	18. 4	19. 5	20. 1
21. 0	22. 2	23. 6	24. 1	25. 4
26. 0	27. 5	28. 3	29. 5	30. 2
31. 6	32. 1	33. 4	34. 5	35. 1
36. 0	37. 1	38. 7	39. 1	40. 3

Exercise 2.2

1. 23	2. 20	3. 2	4. 25	5. 42
6. 11	7. 21	8. 24	9. 40	10. 12
11. 45	12. 42	13. 22	14. 75	15. 33
16. 14	17. 41	18. 23	19. 0	20. 20
21. 152	22. 221	23. 214	24. 613	25. 350
26. 415	27. 427	28. 106	29. 4 111	30. 3 213
31. 4 012	32. 2 003			

Exercise 2.3

1. 8	2. 26	3. 9	4. 15	5. 35
6. 8	7. 19	8. 27	9. 34	10. 29
11. 18	12. 44	13. 18	14. 17	15. 27
16. 8	17. 34	18. 16	19. 7	20. 29
21. 258	22. 382	23. 263	24. 569	25. 42
26. 123	27. 331	28. 332	29. 2 111	30. 3 092
31. 3 778	32. 1 913	33. 2 001	34. 2 966	35. 4 183
36. 733				

Exercise 2.4

	Estimate	Actual
1.	24	22
3.	21	25
5.	10	13
7.	0	4
9.	20	24
11.	30	35
13.	10	13
15.	770	824
17.	460	418
19.	810	823
21.	300	291
23.	200	255
25.	600	575
27.	5 300	4 963
29.	5 500	5 768
31.	2 000	1 777
33.	3 000	2 521
35.	13 000	17 571
37.	61 000	64 547

	Estimate	Actual
2.	66	61
4.	65	67
6.	60	56
8.	30	28
10.	10	11
12.	40	38
14.	30	31
16.	960	920
18.	240	264
20.	200	195
22.	400	437
24.	300	312
26.	400	712
28.	3 300	3 492
30.	3 000	3 033
32.	4 000	4 301
34.	1 000	1 026
36.	33 000	28 688
38.	0	3 306

39. Jamal has $514 left in his bank account.

40. Jessica's old salary was $34 850.

Exercise 2.5

1. The daytime temperature is 21 degrees.
2. You have driven 421 kilometres so far.
3. Heather has 5 metres of edging left.
4. Mona will be 37 years old.
5. There are 97 524 people in both cities.
6. The total driving distance is 402 km.
7. There are 13 447 fans are still there.
8. Ben has 4 587 nails left.
9. Lori has $113 left for groceries.
10. You need to travel another 176 kilometres.