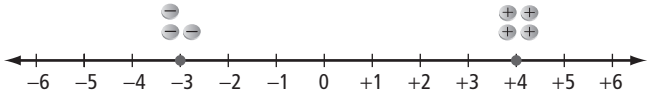
Get Ready

Name: _____ Date: _____

Represent Integers

The **integers** include positive and negative whole numbers and zero.

The diagram shows the integers +4 and −3 represented by points on a number line and by disks. These disks are called integer chips. Four chips with the + sign represent the positive integer +4. Three chips with the − sign represent the negative integer −3.



1. Identify the integer represented by each group of chips.

a) 

b) 

c) 

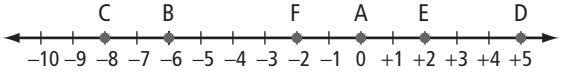
d) 

2. Represent each integer using integer chips. Draw a diagram to show each answer.

a) +2 **b)** −4

c) +7 **d)** −8

3. Identify the integer represented by each point on the number line.



A = B = C =

D = E = F =

4. Draw a number line. Represent each integer below on it.

a) +1 **b)** −1 **c)** 0

d) +5 **e)** −4 **f)** +8

Represent Quantities With Integers

If you have $4, this amount can be represented by the integer +4.

If you spend $3, this amount can be represented by the integer −3.

5. Use an integer to represent each quantity. Explain your reasoning.

a) a height of 5 m above the ground

b) spending $8 on food

c) taking 2 steps backward

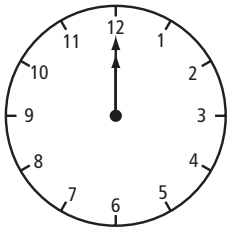
6. Suppose a friend gives you $5. Use an integer to describe what happens

a) from your point of view

b) from your friend's point of view

Name: _____ Date: _____

7. Suppose that midnight on December 31 is "zero hour." Times before zero hour on December 31 are negative. Times after zero hour on January 1 are positive. Complete the table. The first line is completed for you.



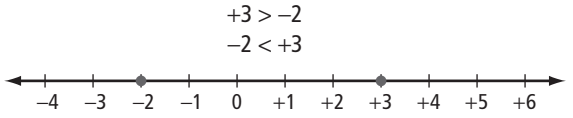
Time	Date	Number of Hours From Zero Hour
9:00 p.m.	December 31	−3
6:00 a.m.	January 1	
4:00 p.m.	December 31	
12:00 noon	January 1	
6:00 p.m.	January 1	
6:00 a.m.	December 31	

Compare and Order Integers

You can compare two integers using the symbols shown in the table.

Symbol	Meaning	Example
>	is greater than	+3 > −2
<	is less than	−2 < +3
=	equals	−5 = −5

On a horizontal number line, a greater integer is to the right of a lesser integer.



On a horizontal number line, positive integers are to the right of 0, negative integers are to the left of 0.

8. Compare the integers by replacing each ☐ with >, <, or =.

a) +2 ☐ +2

b) +5 ☐ 0

c) −3 ☐ 0

d) +7 ☐ +6

e) −1 ☐ +1

f) −2 ☐ −5

9. Use >, <, or = to compare the two integers represented by each situation. Explain your reasoning.

a) the heights of two cliffs that reach 7 m and 9 m above sea level

b) a daily high temperature of +12°C and a daily low temperature of −3°C

10. Arrange the following integers in ascending order (from least to greatest).

−2, −7, +2, −6, 0, −3

11. Arrange the following integers in descending order (from greatest to least).

0, −9, +5, +2, −7, +3

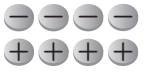
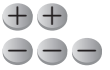
Name: _____ Date: _____

9.1 Explore Integer Addition

***MathLinks 7*, pp. 310–315**

Key Ideas Review

Match each set of integer chips in column B with a statement from column A.

A	B
1. You can use integer chips to represent integer addition.	**a)** 
2. A zero pair includes one positive chip and one negative chip, representing zero.	**b)** 
3. The sum of any two opposite integers is zero.	**c)** 

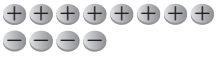
Practise and Apply

4. What addition statement does each diagram represent?

a) 

b) 

c) 

d) 

5. Draw integer chips to show each addition statement, then solve each statement.

a) $(+2) + (+3) =$

b) $(-5) + (+1) =$

c) $(+7) + (-4) =$

d) $(-3) + (-5) =$

6. a) The temperature was $+10^{\circ}$C when Tyler went to school, then dropped 4°C before lunch. Use the sum of two integers to represent this situation.

b) What was the temperature at lunch? Show your work.

Name: _____ **Date:** _____

7. Mariam went shopping on Saturday. She lost $5, but she was still able to buy a new purse for $19.

a) Write an addition statement to represent what happened.

b) How much money does Mariam have now, if she started with $30? Show your work.

8. Use the sum of two integers to represent each situation. What is each sum? Explain the meaning of each numerical answer.

a) Adrienne had 36 unread emails, and then another 16 arrived.

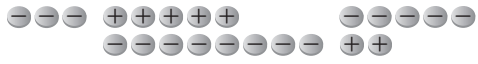
b) John had 5 overdue library books and returned 3.

c) Marnie's backpack had a total mass of 14 kg, and then she took out her lunch bag and geography books, which had a total mass of 4 kg.

d) Rubina owed $6 to her friend, and then she earned $25 babysitting.

e) Mohinder had a bag of 12 potatoes to peel for dinner, and then found 3 more in the cupboard.

9. a) How do these three diagrams show different ways to model −3?



b) Show two different ways to model −2 using integer chips.

Name: _____ Date: _____

9.2 Add Integers

***MathLinks 7*, pp. 316–322**

Key Ideas Review

Choose from the following terms to complete the statements below.

arrow	direction	horizontal	length	vertical

1. You can use a(n) _____ on a number line to represent an integer.

2. **a)** The _____ of the arrow shows the sign of the integer.

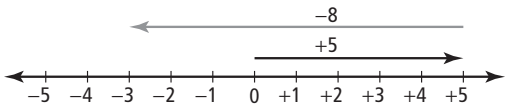
b) The _____ of the arrow shows the value of the numeral in the integer.

3. You can use a _____ or _____ line to represent integer addition.

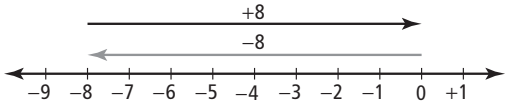
Practise and Apply

4. Write the addition statement represented by each diagram.

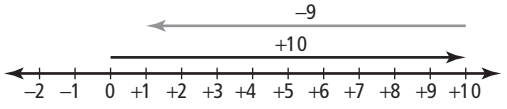
a)



b)

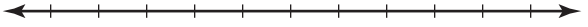


c)



5. Label the number line to show each addition statement. Then, solve each statement.

a) (+4) + (−2) =



b) (−3) + (−5) =

c) (−8) + (+1) =

Name: _____ **Date:** _____

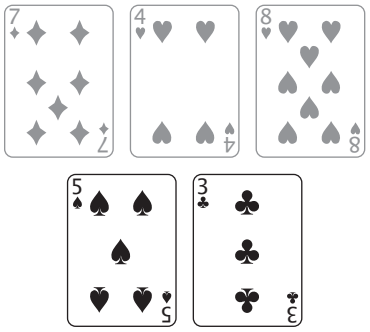
6. Brady owes his Mom $7. He earns $18 mowing lawns.

a) Draw a number line to show how much money Brady has after repaying his mother.

b) Write the addition statement for your number line.

7. Katerina is staying at a hotel for a volleyball tournament in Winnipeg. She takes the elevator up 7 floors, then down 9 floors and gets off. Draw a vertical number line to show what happened.

8. You are playing a game in which the black cards (clubs & spades) represent positive integers, and red cards (hearts and diamonds) represent negative integers. You have the following playing cards in your hand.



a) Which two cards together make the smallest number? Show your thinking.

b) Using one negative and one positive card, what is the largest sum you can make?

c) Which cards make a zero sum?

Name: _____ Date: _____

9.3 Explore Integer Subtraction

***MathLinks 7*, pp. 323–329**

Key Ideas Review

Choose from the following terms to complete the statements.

integer	removing	two	zero

1. You can use _____ chips to represent integer subtraction.

2. a) You can model subtraction by _____ integer chips of the appropriate colour.

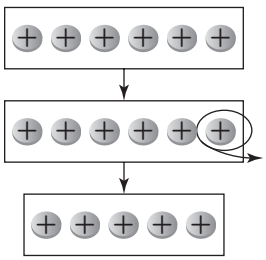
b) Add _____ pairs if there are not enough chips of one colour to remove.

3. Two integers can have _____ differences. For example, (+1) and (−3) have a difference of (+1) − (−3) = _____ and (−3) − (+1) = _____.

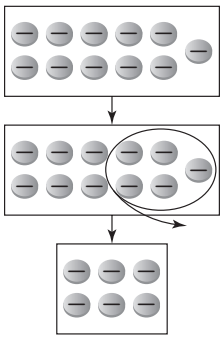
Practise and Apply

4. Write the subtraction statement shown in each diagram.

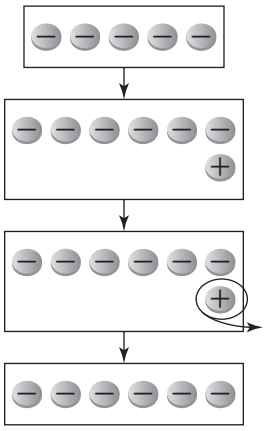
a)



b)



c)



Name: _____ **Date:** _____

5. Draw a diagram to show each subtraction statement, then solve each statement.

a) $(-5) - (-2) =$

b) $(-6) - (+3) =$

c) $(+4) - (-5) =$

6. Write two different subtraction statements for each pair of integers. Solve each statement.

a) $0, +3$

b) $-4, -6$

c) $-5, +8$

7. Quaid owes the store $7 and Heidi owes the store $3. Write a subtraction statement to show how much more Quaid owes than Heidi owes.

8. Hockey players who are on the ice when the opposing team scores, each receive –1 for each goal scored against their team. When Dougan was on the ice Tuesday, his team had two goals scored against it. Then on Thursday, the same thing happened.

a) What is Dougan's point total? Show your thinking.

b) Quan was sick on Tuesday but played on Thursday. Only one goal was scored while Quan was on the ice. Use a subtraction statement to show the difference between Dougan's point total and Quan's point total.

Name: _____ Date: _____

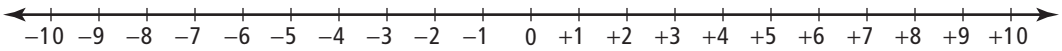
9.4 Subtract Integers

***MathLinks 7*, pp. 330–335**

Key Ideas Review

1. You can subtract an integer by adding the _____. For example, $(+4) - (-5) = (+4) + (\_\_\_\_\_)$.

2. You can represent integer subtraction on a _____ line. For example,



Practise and Apply

3. Complete each statement.

a) $(+4) - (+5) = (+4) + (\_\_\_\_\_)$

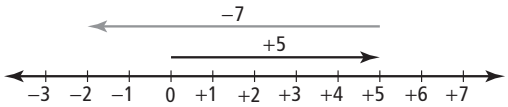
b) $(-6) - (-3) = (-6) + (\_\_\_\_\_)$

c) $(-9) - (-8) = (-9) + (\_\_\_\_\_)$

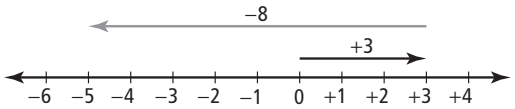
d) $(+9) - (+4) = (+9) + (\_\_\_\_\_)$

4. What subtraction statement does each number line represent? Write the statement, then solve.

a)



b)



5. Write two differences for each pair of integers.

a) +3, +5

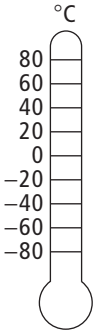
b) +2, −3

c) −1, −4

Name: _____ **Date:** _____

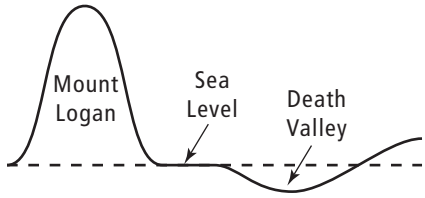
6. In Arviat, Nunavut, in July 1973 temperatures reached 34°C. Earlier that same year in Shepherd Bay, Nunavut, temperatures dropped to −58°C.

a) What is the difference between these temperatures? Use the thermometer to show your thinking.



b) Write two subtraction statements using these integers, then solve.

7. The lowest point in the western hemisphere is Death Valley National Park, 86 m below sea level. The highest point in Canada is Mount Logan, 5959 m above sea level. What is the difference in elevation between these two points? Show your thinking.



8. In 1997, Tiger Woods won the Masters Tournament with a score of −18. Ben Crenshaw finished with a score of +15.

a) What is the difference between the two scores? Show your thinking.

b) The same year John Huston had a score of −5 on the first day. On the second day he had a score of +5. Draw a number line to show both scores. What was his total score at the end of the second day?

Name: _____ Date: _____

9.5 Apply Integer Operations

***MathLinks 7*, pp. 336–341**

1. Decide whether each of the following statements is true or false. Circle the word *True* or *False*. If the statement is false, rewrite it to make it true.

a) **True/False** When solving problems with integers, you do not have to decide when to add or when to subtract integers.

b) **True/False** Some problems involve both adding and subtracting integers.

Practise and Apply

2. Choose either addition (+) or subtraction (−) to make each statement true. Check your answer using a method of your choice.

a) $(+2) \square (-4) = +6$

b) $(-3) \square (+5) = -8$

c) $(-4) \square (-6) = +2$

d) $(-8) \square (+8) = 0$

3. Find the largest number created from adding or subtracting each pair of integers. Show whether to add or subtract.

a) −10, −9

b) +7, −5

c) −4, +11

4. Find the smallest number created from adding or subtracting each pair of integers. Show whether to add or subtract.

a) –8, –6

b) +13, −6

c) –2, +15

d) –5, +10

Name: _____ **Date:** _____

5. Hockey players have a plus-minus record that represents how many goals are scored by their team and against their team while they are on the ice.

Player	Record
Berg	−5
Sutton	+9
Karida	+7
Lindal	+12
Savlic	−4

a) Write an addition or subtraction statement that represents how much higher Lindal's plus-minus record is than Savlic's.

b) Write an addition or subtraction statement that represents how much lower Savlic's plus-minus record is than Sutton's.

c) Using any number of plus-minus records, write an addition or subtraction statement that results in zero. Show your thinking.

6. Owen takes his suitcase to the airport check-in counter and finds it has a mass of 31 kg. When it's empty, the suitcase has a mass of 3 kg. Write an addition or subtraction statement to show the mass of the contents.

7. Marie-Claire is an exchange student from Toulouse, France. She wants to call her parents and needs to figure out what is the best time to call. Her exchange family lives in Lethbridge, Alberta, where the time zone is −7. The time zone for Toulouse is +1.

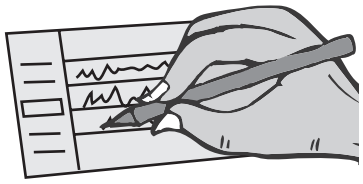
a) Write an addition or subtraction statement to help Marie-Claire calculate the time difference. Show your thinking.

b) If Marie-Claire wants to reach her family around dinner time (6 p.m.) in France, what time should she make the call? Hint: You may wish to draw a picture of a clock face to help you.

Name: _____ Date: _____

Link It Together

Mrs. Wither is examining the record she keeps of all of her bank transactions. Unfortunately, her baby spilled juice on part of the balance column and she can't read it. She needs to know how much is in her bank account before she starts to pay her bills.



Cheque No.	Date	Description	Withdrawal (–)	√	Deposit (+)	Balance
		Previous balance				$ 230.80
	Oct 4	In-store payment	$ 102.69			
124	Oct 15	Hydro bill	$ 85.75			
123	Oct 23	Telephone bill	$ 62.45			
	Oct 30	Paycheque			$ 730.80	

1. a) Calculate each amount in the balance column.

b) What is the total of her bills? Show your work.

c) How much more is her hydro bill than her telephone bill? Show your work.

2. a) On November 1, Mrs. Wither needs to pay a mortgage payment of $625. Does she have enough money? YES NO

b) Show the balance in Mrs. Wither's account. Indicate whether it is positive or negative.

3. a) On November 2, Mrs. Wither needs to make an insurance payment of $249. Does she have enough money? YES NO

b) Show the balance in Mrs. Wither's account. Indicate whether it is positive or negative.

Name: _____ Date: _____

Vocabulary Link

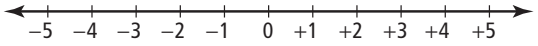
***MathLinks 7*, Chapter 9**

Use the visual and verbal clues to identify important words from Chapter 9. Then, place them in the crossword puzzle blank.

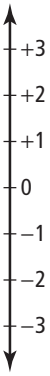
Down

2. Two integers with the same numeral but different signs, such as +3 and –3

_____.

3. 

This is a _____ number line.

4. 

This is a

_____

number line.

Across

1. 

_____

8. Term for numbers that follow one after the other, such as 5, 6, 7, 8

_____.

5. Include positive and negative numbers and 0. _____

6. The symbol $>$ stands for

_____ than.

7. The symbol $<$ stands for

_____ than.

9. Refers to using manipulatives to show an integer sum.

_____