

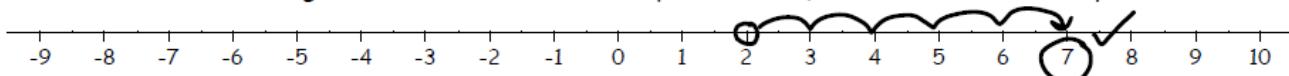
1.2 – Rational Numbers in Decimal Form

List as many situations as you can where people like negative numbers.

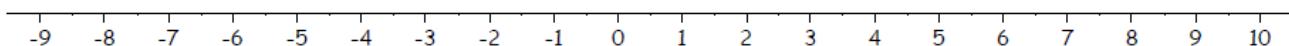
List as many situations as you can where people do not like negative numbers.

The number line is a visual tool that can be used to demonstrate your understanding.

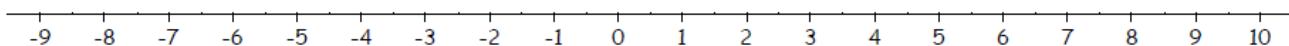
57. Evaluate $2 + 5$ using the number line. Start at positive two, use arrows and circle your answer.



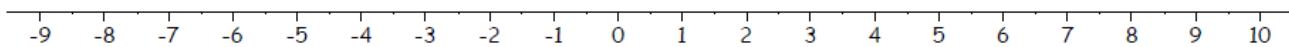
58. Evaluate $2 - 5$ using the number line.



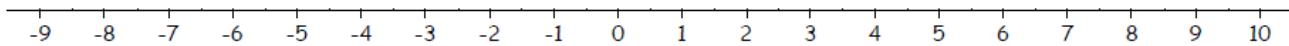
59. Evaluate $2 - (-5)$ using the number line.



60. Evaluate $2 + (-5)$ using the number line.



61. Evaluate $-2 - 5$ using the number line.

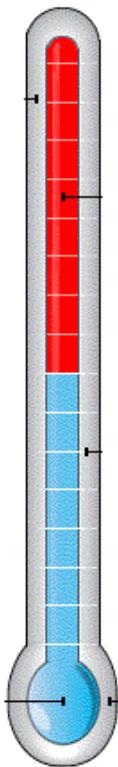


Observations:

62. $2 + 5$ is equivalent to which of the following: <ul style="list-style-type: none">• $2 - 5$• $2 - (-5)$• $-2 - 5$• $2 + (+5)$	63. $2 - 5$ is equivalent to which of the following: <ul style="list-style-type: none">• $2 + 5$• $2 + (-5)$• $-2 + 5$• $-5 + 2$	64. $-2 - 5$ is equivalent to which of the following: <ul style="list-style-type: none">• $-2 + (-5)$• $2 + (-5)$• $-5 - 2$• $-5 + 2$
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Example 1:

When reading and recording external temperatures, we use a thermometer.



Indicate the following temperatures on the thermometer and calculate the difference between them.

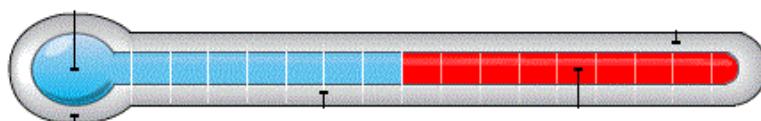
A) The coldest recorded temperature in Victoria last January was 4.4°C . Compare that to our hottest day in July, 30.3°C .

What is the difference between those daily temperatures?

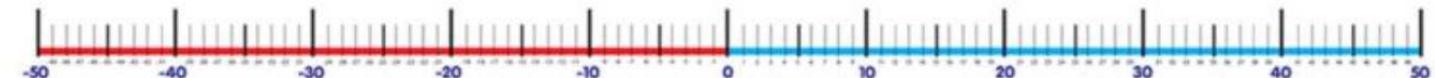
B) What if we looked at another Canadian city? Say Calgary. On that same day in January the temperature was -23.3°C . And that summer day in July? It was 32.1°C .

What is the difference between those daily Calgary temperatures?

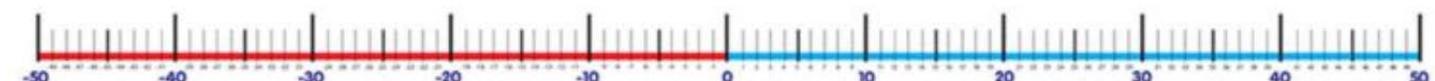
You can think of a thermometer as a _____ number line.



A) Mark the two **Victoria temperatures** on the number line & calculate the difference:



B) Mark the two Calgary temperatures on the number line & calculate the difference:



Using a number line can be a helpful tool to visualize operations that include

_____ and _____ numbers

RULES for Adding & Subtracting Positive and Negative Numbers

Rule 1: 

Subtracting a Number from a Negative Number is same as Adding.

Example:

Rule 2: 

Adding a positive number to a positive number is regular addition.

Example:

Rule 3: 

Subtracting a positive number is same as regular Subtraction. The answer will take the sign of the bigger number.

Example:

Rule 4: 

Adding a negative number to a number is same as regular Subtraction. The answer will take the sign of the bigger number.

Example:

Subtraction moves left on the number line.

Example. $2 - 5 = -3$ and $-2 - 5 = -7$
Subtracting 5 moves 5 units left on the number line.

Addition moves right on the number line.

Example $2 + 5 = 7$ and $-2 + 5 = 3$ Adding 5 moves 5 units right on the number line.

Subtracting a negative number has the same impact as adding.

Example $2 - (-5) = 7$ and $-2 - (-5) = 3$ and $-2 + 5 = 3$

- Adding moves right. Subtracting moves left. Subtracting a negative moves right.

Example 2: Will the answers below be a positive or negative value? Predict. Then add.

- a) $-3.1 + 1.2$ b) $3.1 + (-1.2)$ c) $3.1 + 1.2$ d) $-3.1 + (-1.2)$



* Remembering that **subtraction means difference**, consider $5 - (-3)$; think, what is the difference between 5 and -3?

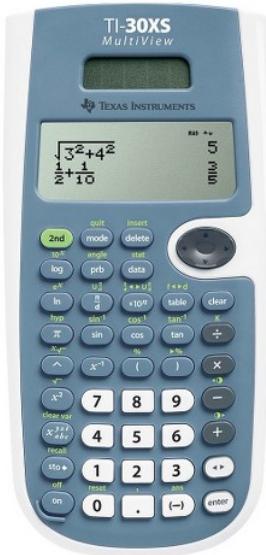


Subtract:

e) $(-3) - 7$ f) $3 - 7$ g) $7 - 3$ h) $-7 - (-3)$ i) $-3 - (-7)$



Calculator input – difference between negative and subtraction sign in calculator *



Example 3: Subtract

a) $-2.3 - (-3.9)$ b) $3.1 - (-1.2)$

Example 4: At the beginning of June, the Mr. Plow's Snow Removal was \$235.46 in debt. By the end of August, the company had increased its debt by \$156.71.

- Use a rational number to represent each amount.
- Calculate how much the company owed at the end of August.

Example 5: Mike jumps off the 15.8 m high cliff at Thetis Lake and plunges 4.1 metres below the surface of the water before returning to the surface.

- Use rational numbers to write a statement represent the difference in heights from the top of the cliff to the bottom of his dive.
- Determine the distance traveled by Mike.
- The water is 10.6 m deep. What is the distance from the bottom of the lake floor to the bottom of the Mike's dive?

What does evaluate mean? _____

Evaluate.

$$85. \quad 3 - 5 + (-4) =$$

$$86. \quad 8 - 3 - (-7) =$$

$$87. \quad -4 + (-1) - 4 =$$

$$88. \quad 11 - 2 - (-9) =$$

$$89. \quad 13 - 4 + (-8) =$$

$$90. \quad -9 + (-2) - 8 =$$

PRACTICE



Use an integer to represent each of the following situations.

80. Vincent's bank account currently has a balance of negative four dollars. If he withdraws another nineteen dollars, what will his bank balance be?

81. Billy plays two rounds of golf. His score in the first round is minus five and his score on the second round is plus 3. What will his final score be after two rounds?

82. Getbeeger wants to gain some weight. He starts eating well and working out and gains nine pounds over an 8 month time period. Unfortunately at the start of the ninth month he got the flu and lost 7 pounds. Use an integer to describe his total weight gain.

83. Sandeesa bought six one-dollar raffle tickets and won five dollars. Use an integer to represent her total winnings.

84. In a town called "Wehtucold", the average temperature during the day is negative 41 degrees Celsius. At night, the temperature drops another 12 degrees. What is the temperature at night?

Fill in the multiplication table.

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

97. The numbers in the bolded boxes are called perfect square numbers. Why might this be?

I.2 – Rational Numbers in Decimal Form...continued!

Name: _____

Block _____

Evaluate.

98. $2 \times 5 =$

99. $-2 \times 5 =$

100. $2 \times (-5) =$

101. $-2 \times (-5) =$

102. $2(-7) =$

What are the RULES for MULTIPLYING & DIVIDING Integers?

Rule

Example

$$\begin{array}{c} + \\ \times \\ + \end{array} = \begin{array}{c} + \end{array}$$

$$\begin{array}{c} + \\ \times \\ - \end{array} = \begin{array}{c} - \end{array}$$

$$\begin{array}{c} - \\ \times \\ + \end{array} = \begin{array}{c} - \end{array}$$

$$\begin{array}{c} - \\ \times \\ - \end{array} = \begin{array}{c} + \end{array}$$

$$\begin{array}{c} + \\ \div \\ + \end{array} = \begin{array}{c} + \end{array}$$

$$\begin{array}{c} - \\ \div \\ - \end{array} = \begin{array}{c} + \end{array}$$

$$\begin{array}{c} + \\ \div \\ - \end{array} = \begin{array}{c} - \end{array}$$

$$\begin{array}{c} - \\ \div \\ + \end{array} = \begin{array}{c} - \end{array}$$

In summary....

Same Sign = Positive. Different Sign = Negative.

PRACTICE

Evaluate.

103. $4 \times 6 =$

104. $-8(3) =$

105. $(-11)(-5) =$

106. $-2 \times 23 =$

107. $-55 \div 5 =$

108. $-5 \div (5) =$

109. $(44) \div (-4) =$

110. $-20 \div 4 =$

111. $-9 \times -5 =$

112. $-5(5) =$

113. $(9)(-4) =$

114. $-20 \times 3 =$

Example 6: Multiplying decimals

a) $1.5 \times 1.8 =$ _____ b) $(-1.2)(0.3) =$ _____ c) $(-4)(-1.02) =$ _____



Estimate and then determine the product.

217. $2.34 \times 6.8 =$

$$\begin{array}{r} 234 \\ \times 68 \\ \hline 1872 \\ 14040 \\ \hline 15.912 \end{array}$$

3 decimal places

218. $62.8 \times 46.2 =$

219. $72.9 \times 66.12 =$

220. $112.04 \times 50.19 =$

221. $15.3 \times 6.8 =$

15.912

222. $-22.7 \times 4.2 =$

223. $-32.9(-26.2) =$

224. $112 \times (-0.29) =$

Example 7: On February 5, 2008, the price of share in CIBC changed by -\$1.640. Dan owns 35 shares. By how much did those shares change in value that day?

Evaluate.

115. $(1)(1) =$

116. $(1)(-1) =$

117. $(-1)(-1) =$

118. $(-1)(-1)(-1) =$

119. $(-1)(-1)(-1)(-1) =$

120. $-(-1)(-1)(-1)(-1) =$

Answer the following with a yes or a no.

121. If two negative numbers are multiplied together will their product be positive?

122. If three negative numbers are multiplied together will their product be positive?

123. If four negative numbers are multiplied together will their product be positive?

124. If an even number of negative numbers are multiplied together will their product be positive?

125. If an odd number of negative numbers are multiplied, together will their product be positive?

Multiplying MORE THAN 1 Integer...How do + and - signs apply?



Determine whether each product is positive or negative.

134. $(-31)(-14)(-91) = \text{ } \cancel{-39494}$

Negative ✓

135. $(-12)(-51)(-19)(-1) =$

evaluate.

136. $-(-101)(-1)(-1)(-199) =$

137. $(-11)(-2)(-12)(2)(-31) =$

138. $(-1)(11)(-1)(51)(-1)(-2) =$

139. $(-5)(-92)(-1)(-19)(-2) =$

Find the product.

140. $2 \times 3 \times 1 =$

141. $-2 \times 5 \times (-1) =$

142. $-4 \times (-3) \times (-1) =$

143. $-1 \times (-2) \times 3 \times (-1) =$

144. $1 \times (-2) \times 5 \times (-1) =$

145. $-1 \times (-1) \times (-1) \times (-4) =$

146. $(-1)(-2)(-1)(2)(-1)(-2) =$

147. $(-1)(1)(-1)(5)(-1)(-2) =$

148. $(-5)(-2)(-1)(-1)(-2) =$

$$\star \text{Review: } (+) \div (+) = \quad (-) \div (-) = \quad (-) \div (+) = \quad (+) \div (-) = \quad \star$$

Warm Up: Dividing Integers

a) $8 \div (-2) =$ _____

b) $(-12) \div (-3) =$ _____

Example 8: Dividing Integers ***with Decimals***.

a) $(-1.38) \div 0.6$

b) $(-2.56) \div (-0.4)$

Estimate and then evaluate each quotient. Round your answer to 1 decimal place.

225. $234 \div 6 =$

226. $1204 \div 5 =$

227. $24 \div 7 =$

228. $-534 \div 8 =$

$6 \overline{)234}$

Example 9: Determine the missing number in each division statement.

a) $[] \div (-2.6) = 9.62$



Complete all ***“practice”*** questions in this booklet

Section 1.2 pg 18-19

Questions #1-11, *12, *15

(some of these questions you may have all ready done-yesterday's homework was:
#1,2,5,7,8ab,10,*12)