

Important Concepts . . .

Preview Review



Mathematics Grade 7
**W1 - Lesson 5: Integers and Number
Lines**

Important Concepts of Grade 7 Mathematics

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W1 - Lesson 2	Decimal Numbers
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Materials Required

Math Set
Calculator

**No Textbook
Required**

**This is a stand-
alone course.**

Mathematics Grade 7

Version 6

Preview/Review W1 - Lesson 5

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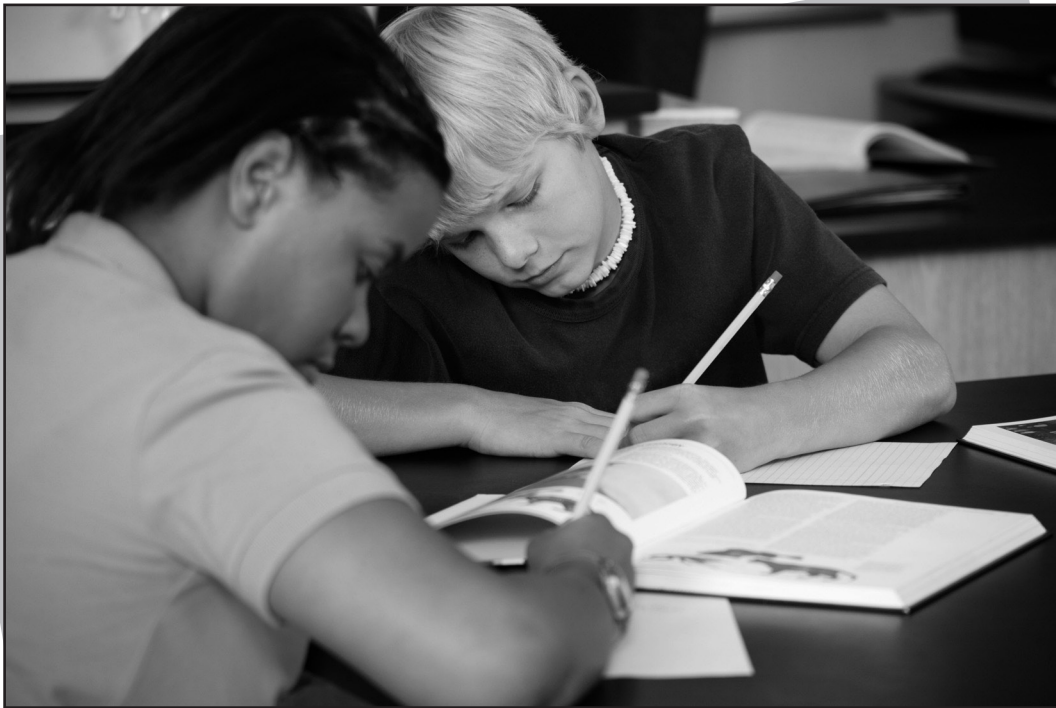
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Preview/Review Concepts for Grade Seven Mathematics



W1 – Lesson 5:

Integers and Number Lines

W1 – Lesson 5: Integers and Number lines

Review:

- *Integer basics.*

Positive integer: a number greater than zero. Sometimes indicated by a plus sign (+).

Examples: +5, +72, +56

Negative integer: a number less than zero. Always indicated by a minus sign (-).

Examples: -25, -90, -34

Absolute value: The value of a number without regard to its sign.

Example: +7 and -7 both have an absolute value of 7.

Additive inverse: a number with the same absolute value, but opposite sign.

Example: -6, additive inverse is +6.

Practice:

Write an integer to represent each situation.

- Four years before now
- 25 degrees below freezing
- 11 floors above ground level
- 40 m below sea level

Arranging Integers

Zero as a reference point:

A positive integer is like "normal" numbers. The larger the absolute value, the greater the integer.

$$35 < 78$$

A number that is negative is smaller than zero, the greater the absolute value of a negative number, the smaller the integer is. $-35 > -78$

Practice:

Arrange the following integers in order from least to greatest.

- 24, -15, 11, 9, -2
- 0, -4, 12, 7, -2, 8
- 12, -5, 7, 0, -9, 1

Objective:

- I can use manipulatives to model integers.*

Positive integer: represented by a clear tile



Negative integer: represented by a shaded tile



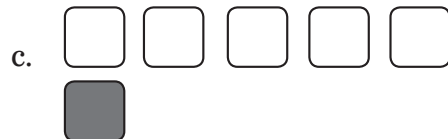
Zero pair: to model zero, a positive tile combined with a negative tile.

**Examples:**

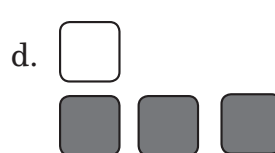
= 4



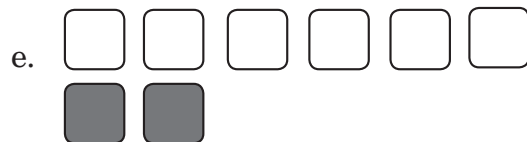
= -2



= 4



= -2



= 4



= -2

Practice:


Draw two different models for the integer.

a. -5

b. 6

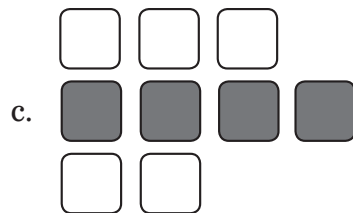
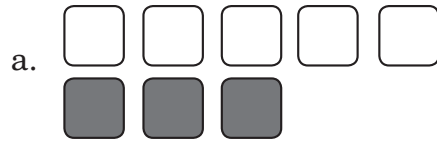
Objective:

- I can use manipulatives to model the sum of integers.*

Examples:**Adding two positive integers: $(+5) + (+9)$** Count the total = $(+14)$ $+5$:  $+9$: **Adding two negative integers: $(-2) + (-7)$** Count the total = (-9) -2 :  -7 : **Adding a positive and a negative integers: $(+4) + (-6)$** Count the remaining tiles after the zero pairs = (-2) $+4$:  -6 : 

Practice:

1. Write the addition equation represented by the following tiles.



2. What is the sum of

a. 2 white tiles and 5 shaded tiles

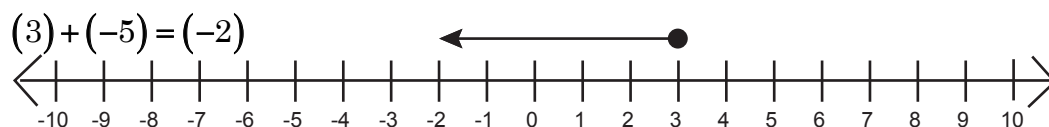
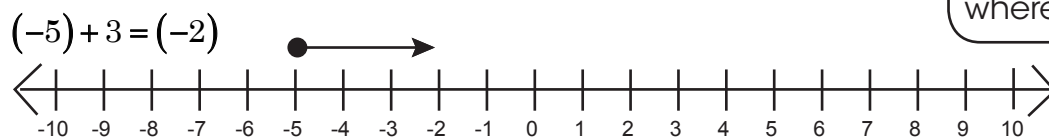
b. 3 white tiles and 7 shaded tiles

c. 6 white and 4 shaded

d. 2 white and 2 shaded

Solving addition of integers using a number line:

Examples:

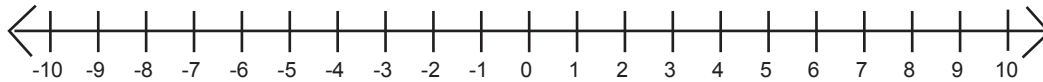


When solving addition equations using a number line, start at the first number. Draw a line the length of the second number in the correct direction:
add a positive - right
add a negative - left
Read the number where the line ends

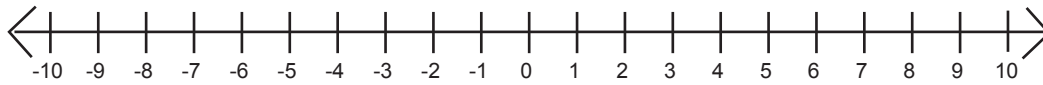
Practice

1. Show the sum on the number line.

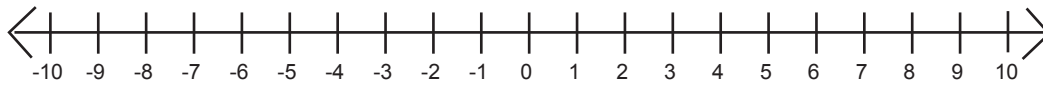
a. $7 + (-8) =$



b. $(-2) + (8) =$



c. $(-3) + (-2) =$



2. Solve.

a. $(-5) + (+9) =$

b. $(+8) + (+4) =$

c. $(-4) + (+6) =$

d. $(+7) + (-3) =$

e. $(+9) + (-5) =$

f. $(-7) + (-9) =$

g. $(-9) + (-3) =$

h. $(-43) + (-27) =$

i. $(+4) + (-9) =$

j. $(-70) + (+1) =$

k. $(-2) + (+5) =$

l. $(-20) + (+92) =$

m. $(-6) + (+7) =$

n. $(+19) + (+2) =$

o. $(-15) + (+8) =$

Objective:

- I can use manipulatives to model the difference of integers,*

Subtracting integers:

To find the difference between two numbers, **add the additive inverse.**

Examples:**Subtracting two positive integers:** $(+9) - (+3)$

+9: 

Minus (+3)

Count the total = (+6)


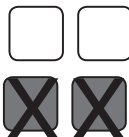
Subtracting two negative integers: $(-4) - (-6)$

-4:  

Minus (-6): but there are not enough – add zero pairs

Count the total remaining tiles = (+2)

Subtracting a negative from a positive integer: $(+5) - (-2)$

+5:  

Minus (-2): but there are no negative tiles to take away – add zero pairs

Count the remaining tiles = (+7)

Subtracting a positive from a negative integer: $(-6) - (3)$

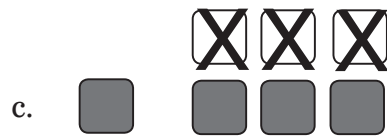
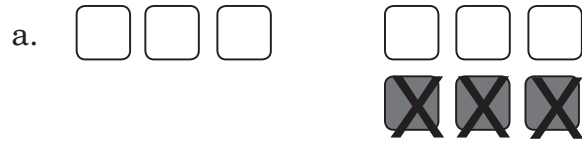
-6:  

Minus (3): but there are no positive tiles to take away – add zero pairs

Count the remaining tiles = (-9)

Practice:

1. Write the subtraction equation represented by

**Solving subtraction of integers using a number line:****Examples:**

Note: the arrow moves in the **opposite** direction when subtracting.

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



$$(-9) - (-5) = (-4)$$



Practice

1. Show the difference on the number line.

a. $(-3) - (-5) =$



b. $(5) - (6) =$



c. $(4) - (-4) =$



d. $(-8) - (-7) =$



Hint: Rather than subtracting integers, add the additive inverse..

2. Solve.

a. $(-7) - (+8) =$

b. $(-5) - (+3) =$

c. $(+2) - (-6) =$

d. $(+2) - (+8) =$

e. $(-8) - (-8) =$

f. $(-7) - (+1) =$

g. $(+1) - (+9) =$

h. $(0) - (+8) =$

i. $(+9) - (-6) =$

j. $(-1) - (+3) =$

k. $(+2) - (+2) =$

l. $(+4) - (-2) =$

Objective:

- I can sort numbers on a number line.*

Ascending order: numbers ordered from least value to greatest value.

Descending order: numbers ordered from greatest value to least value.

To compare numbers, convert numbers into forms that are easily comparable.
Example: all decimals or all fractions

Examples:

1. Arrange 1.2 , $\frac{5}{6}$, -2.3 , 0.83 , -3.4 in ascending order.

Change to comparable forms:

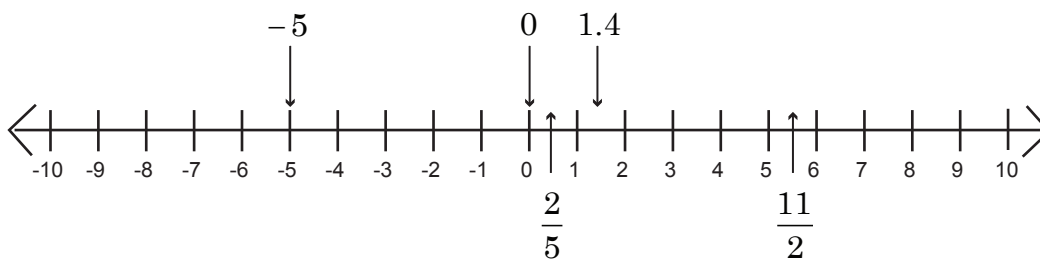
1.2 , $0.8\bar{3}$, -2.3 , 0.83 , -3.4

Arrange:

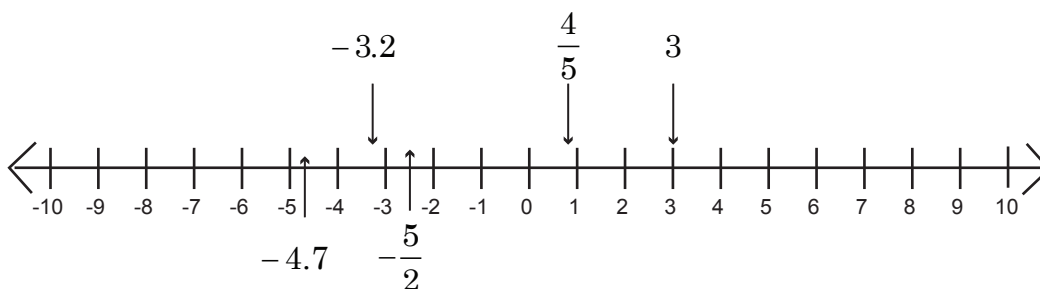
-3.4 , -2.3 , 0.83 , $\frac{5}{6}$, 1.2

2. Arrange $\frac{11}{2}$, -5 , $\frac{2}{5}$, 0 , 1.4 on the number line.

$$\frac{11}{2} = 5.5 \quad \frac{2}{5} = 0.4$$



3. Arrange $-\frac{5}{2}$, -4.7 , $\frac{4}{5}$, 3 , -3.2 on the number line.



Practice:

1. Arrange the numbers in **ascending** order.

a. $7, -\frac{21}{3}, -5.3, 4.5, 0.3$

b. $-3, 4\frac{1}{2}, 6.8, -\frac{2}{3}, -0.6, 2.2$

c. $-2\frac{7}{9}, -2.8, -\frac{2}{8}, 0.5, 1.7$

d. $6\frac{1}{5}, -3.3, -\frac{33}{5}, 7.5, 0.4$

2. Arrange the numbers in **descending** order.

a. $9, -\frac{54}{6}, -4.8, -0.8, 5.6$

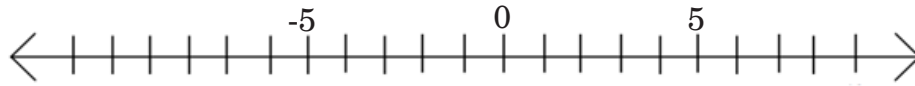
b. $-0.2, 4\frac{7}{8}, -1.9, \frac{38}{8}, -6, 4$

c. $-1\frac{4}{11}, -0.7, \frac{6}{3}, 1.6, -4$

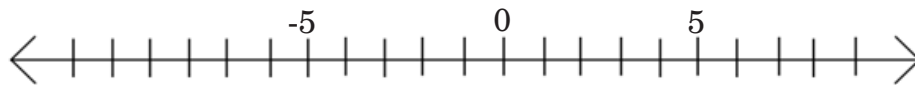
d. $\frac{11}{5}, -4.6, -\frac{12}{4}, 5.4, 0$

3. Sort the following numbers on a number line.

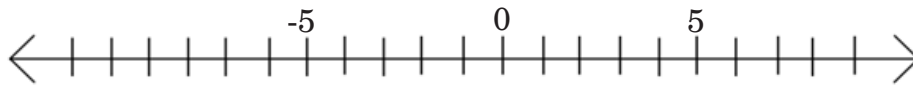
a. $1\frac{3}{7}$, 3.6, -2.4, -3, $\frac{2}{3}$



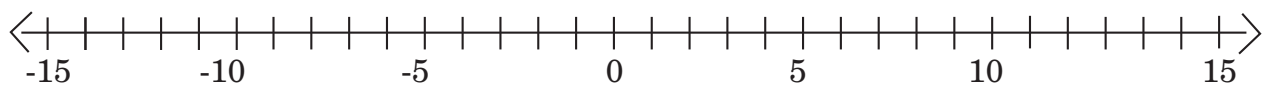
b. $\frac{14}{3}$, -2.8, 4.1, 7, $-\frac{4}{5}$



c. $-\frac{2}{3}$, 1.4, 6, -0.5, $\frac{4}{6}$



d. -1.5, 14, $-\frac{1}{2}$, $2\frac{2}{3}$, 6.8



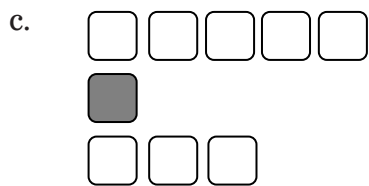
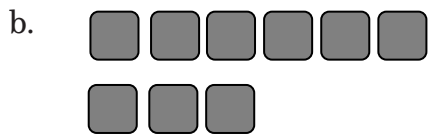
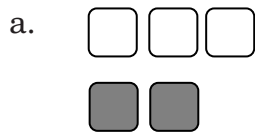
Summary:

- *Using what you learned, answer the following questions.*

1. Find the integer that best represents the sentence.
 - a. 16 units to the right of -6 on a number line
 - b. Deposit \$310 into a bank account
 - c. An altitude of 2500 feet
 - d. 11 units to the left of -16 on a number line
 - e. The additive inverse of 112.
 - f. 45° below freezing
2. Compare two numbers by indicating if the numbers are greater than ($>$) or less than ($<$) or equal to ($=$).

a. -14 -28/2	b. 12 -22	c. -1/3 -0.33
d. 3 -2	e. 5.2 5.3	f. -1.1 -1.2
3. Draw two different models that would represent the integer
 - a. -3
 - b. 7

4. Write an addition equation represented by the following models



5. Model on the number line

a. $(-2) + 7 =$



b. $(3) + (-5) =$



c. $7 + (-8) =$



6. Solve.

a. $3 + 1 =$

b. $(-4) + (-6) =$

c. $(-2) + 0 =$

d. $6 + 1 =$

e. $10 + (-8) =$

f. $(-5) + 6 =$

g. $9 + (-6) =$

h. $(-2) + 8 =$

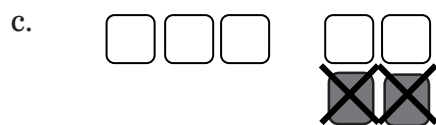
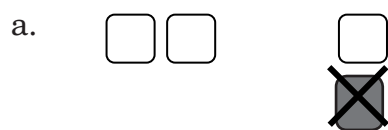
i. $10 + (-5) =$

j. $(-3) + 7 =$

k. $(-3) + 7 =$

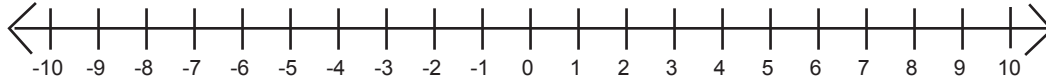
l. $14 + (-19) =$

7. Write a subtraction equation represented by the following models

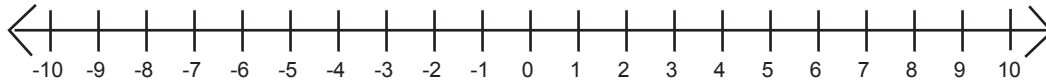


8. Model on the number line

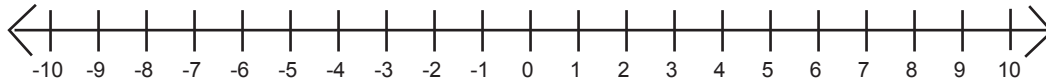
a. $(6) - (2) =$



b. $(-3) - (3) =$



c. $(-6) - (-10) =$



9. Solve.

a. $5 - (-5) =$

b. $1 - 6 =$

c. $(-3) - 5 =$

d. $8 - (-2) =$

e. $3 - (-6) =$

f. $(-2) - (-7) =$

g. $52 - 0 =$

h. $16 - 26 =$

i. $(-3) - (9) =$

j. $7 - (-1) =$

k. $16 - 4 =$

l. $2 - (-2) =$

m. $14 - 7 =$

n. $(-14) - 7 =$

10. Arrange the numbers in ascending order.

a. $6, -\frac{22}{4}, -4.3, 0.6, \text{ and } 2.5$

b. $-7, 2\frac{1}{2}, -6.3, -2.5, \frac{2}{3}, -2.5, \text{ and } 4.2$

11. Arrange the numbers in descending order.

a. $8, \frac{56}{9}, -6.9, -3.8, -0.2, \text{ and } 6.6$

b. $-1.2, 6\frac{7}{8}, -6.9, \frac{33}{3}, -3, \text{ and } 7$

12. Sort the following numbers on a number line.

a. $1\frac{4}{9}, -3.2, -1.4, 5, \frac{1}{3}$



b. $\frac{16}{3}, -1.3, 5.2, -3, -\frac{4}{6}$





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