Study the following.

operation (op-uh-**ray**-shuhn) – in math, something you do to a number or numbers to get a different number. Examples: addition, subtraction, multiplication. (I used the operation of addition to solve the problem.)

amount (uh-**mount**) – how much of something there is. (He had only a small amount of money left.)

quantity (**kwahn**-tuh-tee) – 1. an amount. (I had a large quantity of grapes.)

2. a number. (The quantity of oranges I had was 3.)

Say each word out loud and write it in the blank.

operation _____
amount _____
quantity _____

Write each definition in your own words.

operation

amount

quantity (definition 1)

quantity (definition 2)

Write two sentences using each word.

operation
1.

2.

amount
1.

2.

quantity (definition 1)
1.

2.

quantity (definition 2)
1.

2.

Matching. (Words can connect to more than one definition.)

operation	something you do to a number or numbers to get a different number
amount	an amount
quantity	a number
	how much of something there is

Study the following.

addition (uh-**dish**-uhn) – the operation of bringing together, or adding, numbers (The addition of 2 and 3 gives 5.)

sum (**suhm**) – 1. the answer when you add. (The sum of 3 and 4 is 7.)

2. the process of addition on two or more numbers. (Find the sum of 2 and 3. Calculate the sum of 2, 3 and 4.)

subtraction (suhb-**trak**-shun) – 1. the operation of taking away one amount from another. (Use subtraction to find 10 take away 3, to get 7. The subtraction of 4 minus 1 is 3.)

2. the operation of finding a number which gives a measure of the difference in size between two numbers or quantities. (To find the difference between Joe's weight and Mark's weight, you would use subtraction.)

difference (**dif**-ruhnss) – 1. the answer when subtracting. (The difference of 5 subtracted from 7 is 2. The difference of 7 – 5 equals 2.)

2. the amount by which one quantity is greater or less than another. To find the difference subtract the larger minus the smaller. (The difference between 8 and 5 is 3. The difference between 5 and 8 is 3.)

Say each word out loud and write it in the blank.

addition _____
sum _____
subtraction _____
difference _____

Write each definition in your own words.

addition

sum (definition 1)

sum (definition 2)

subtraction (definition 1)

subtraction (definition 2)

difference (definition 1)

difference (definition 2)

Write two sentences using each word.

addition
1.

2.

sum (definition 1)
1.

2.

sum (definition 2)
1.

2.

subtraction (definition 1)
1.

2.

subtraction (definition 2)
1.

2.

difference (definition 1)
1.

2.

difference (definition 2)
1.

2.

Matching. (Words can connect to more than one definition.)

addition	the operation of bringing together, or adding, numbers
	the operation of taking away one amount from another
sum	
	the answer when subtracting
	the answer when you add
	the process of addition on two or more numbers
subtraction	
	the operation of finding a number which gives a measure of the difference in size between two numbers
difference	
	the amount by which one quantity is greater or less than another.

Study the following.

positive number (**poz**-uh-tiv **nuhm**-bur) – a number greater than zero. Examples: 3, 4, 10 (6 is a positive number.)

negative number (**neg**-uh-tiv **nuhm**-bur) – a number less than zero. Examples: -7, -8, -12 (-9 is a negative number.)

integer (**in**-tuh-jur) – positive and negative numbers and zero. Examples: -2, -1, 0, 1, 2, 3 (15 and -15 are integers.)

sign (**sine**) – something that stands for something else (a symbol). (The sign ÷ stands for "divided by.")

\+ 1. The sign used to show addition.
It is called a **plus sign (pluhss)**.
(1 + 2 equals 3.)
(You say "one plus two equals three")

2. The sign used to show a **positive number**. (+4 is said, "positive four" or "plus four.")

– 1. The sign used to show subtraction.
It is called a **minus sign (mye-**nuhss**)**.
(5 – 1 equals 4.)
(You say "five minus one equals four.")

2. The sign used to show a **negative number**. (–3 is said, "negative three" or "minus three.")

\- a negative sign. Sometimes this shorter line is used to show a negative number. (examples: -4, -5 versus the longer line –4, –5

Say each word out loud and write it in the blank.
positive number _____
negative number_____
integer_____
sign_____
plus _____
minus _____

Write each definition in your own words.
positive number

negative number

integer

sign

+ (definition 1)

+ (definition 2)

– (definition 1)

– (definition 2)

-

Write two sentences using each word.

positive number
1.

2.

negative number
1.

2.

integer
1.

2.

sign
1.

2.

Matching. (Words can connect to more than one definition.)

positive number	something that stands for something else (a symbol)
negative number	positive and negative numbers and zero
	a number less than zero
integer	a number greater than zero
	The sign used to show addition.
sign	A plus sign
	The sign used to show subtraction
+	A minus sign
–	The sign used to show a positive number
-	The sign used to show a negative number

List 3 examples where negative numbers are used in life.

1.

2.

3.

Show three examples of each.

1. positive numbers

2. negative numbers

3. integers

4. signs

Study the following.

If a number does not have a sign in front of it, then it is a positive number. It could also be written with a + (plus sign) in front of the number.

Examples: 5 is the same as +5
+3 is the same as 3

Note: For +3 you can say "plus three" or "positive three."

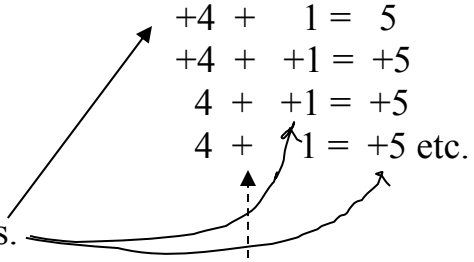
Write these numbers two different ways.

Four	4	+4
Seven		
Plus three		
Six		
Positive ten		
Two		
Eleven		
Plus one		
Thirteen		
Twenty		
Positive fifteen		

Study the following.

A plus sign can be written in front of positive numbers in addition or subtraction problems also.

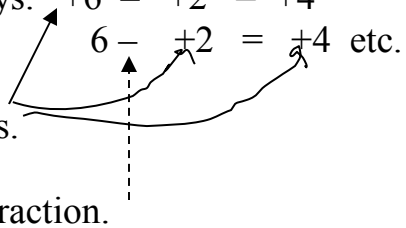
Example: 4 + 1 = 5 can be written many ways. +4 + +1 = 5
+4 + 1 = 5
+4 + +1 = +5
4 + +1 = +5
4 + 1 = +5 etc.



These plus signs show positive numbers.

These plus signs show addition.

Example: 6 – 2 = 4 can be written many ways. +6 – +2 = +4
6 – +2 = +4 etc.



These plus signs show positive numbers.

These minus signs show subtraction.

Write these problems as many different ways as you can. (There are seven possible ways.)

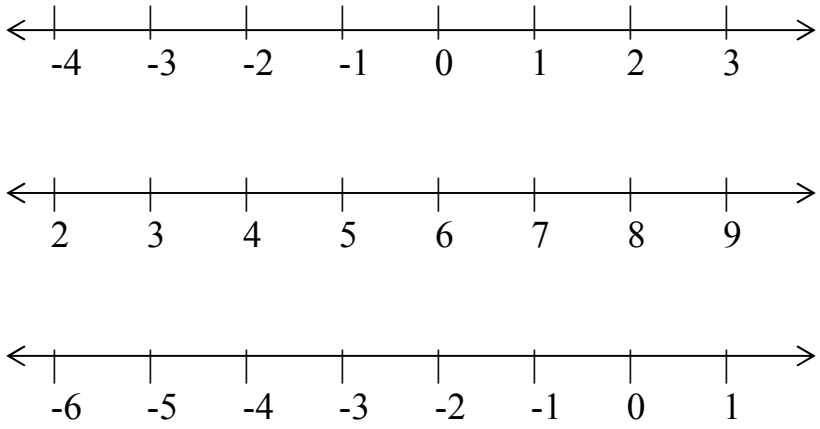
1. 3 + 4 = 7

2. 8 – 3 = 5

Study the following.

number line (**nuhm**-bur **line**) – a straight line with marks along it showing numbers. There is an arrow on each end showing that the number line continues on in both directions. The numbers can be zero, positive, or negative. The positive numbers increase going to the right, and the negative numbers go towards the left.

Examples:



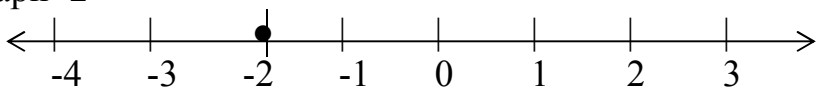
Draw two number lines.

1.

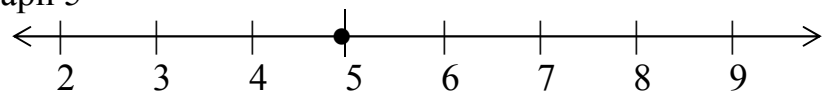
2.

To graph a number on a number line, put a dot on the line.

Examples:
Graph -2



Graph 5



Draw a number line for each of the following, and graph that number on it.

1. 3

2. -1

3. 5

4. -4

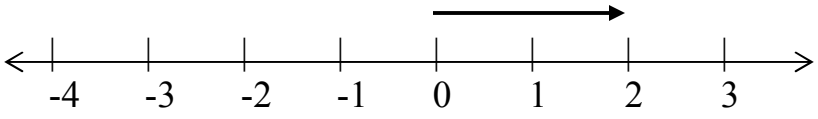
5. +1

Study the following.

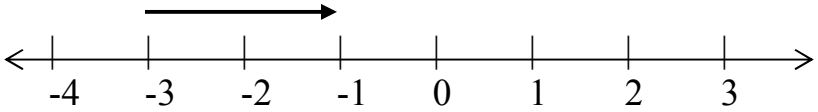
Arrows can be used to show a number or an operation on a number line.

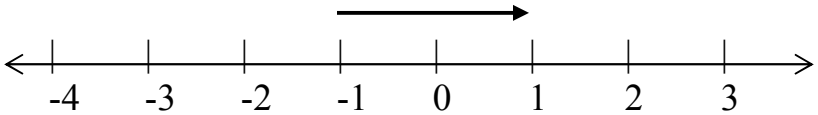
They can show
1. positive numbers (an arrow pointing to the **right**)
2. negative numbers (an arrow pointing to the **left**)
3. addition (an arrow pointing to the **right**)
4. subtraction (an arrow pointing to the **left**)

examples:
1. An arrow showing the positive number +2.

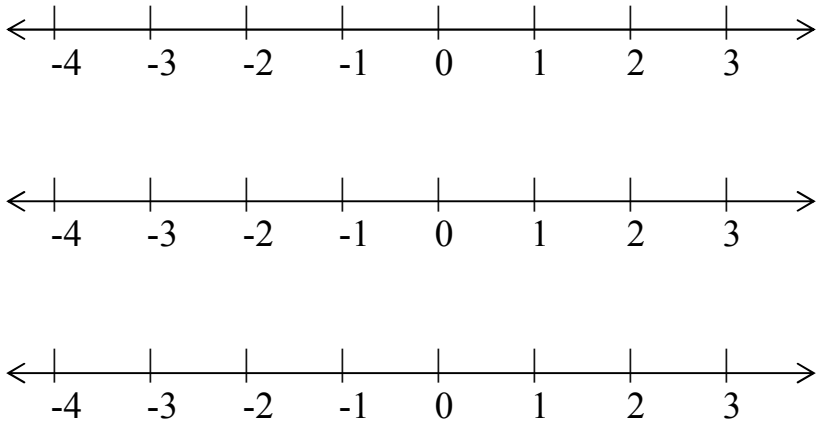


Note: you can start anywhere in the line and show +2 from there.

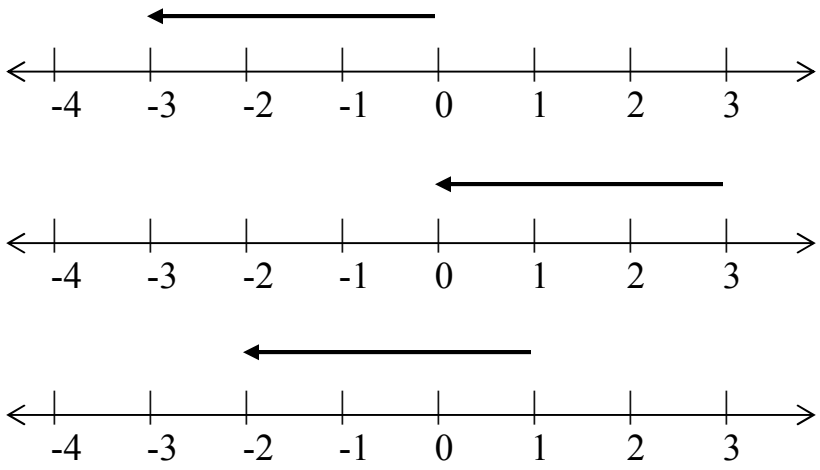




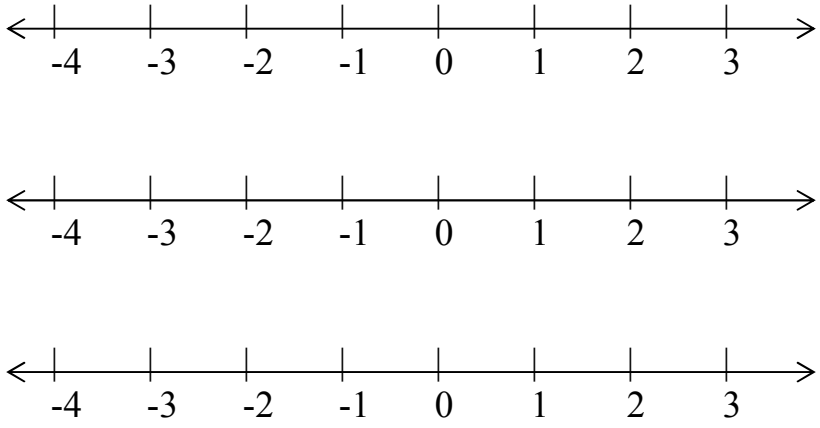
practice: Draw arrows for three ways to show +4.



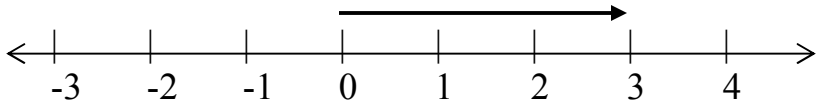
examples:
2. An arrow showing the negative number -3.



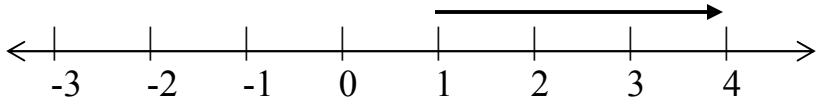
practice: Draw arrows for three ways to show -2



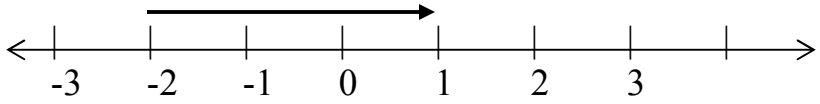
examples:
3. An arrow showing addition of 3.



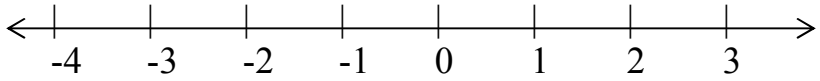
An arrow showing starting at 1 and adding 3.



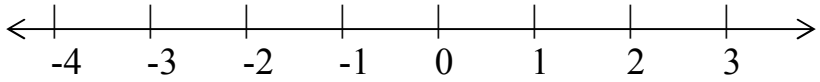
An arrow showing starting at -2 and adding 3.



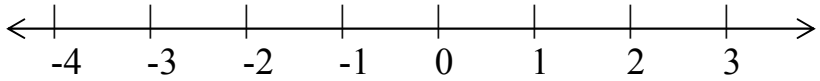
practice: Draw an arrow showing addition of 2. (Start at 0.)



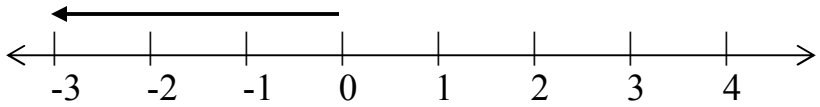
Draw an arrow showing starting at -4 and adding 2.



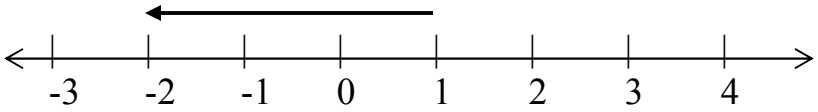
Draw an arrow showing starting at 1 and adding 2.



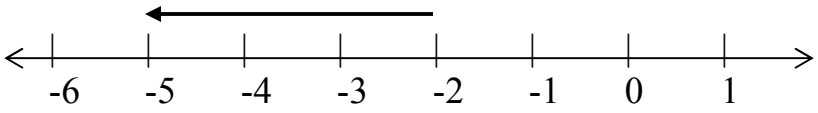
examples:
4. An arrow showing subtraction of 3.



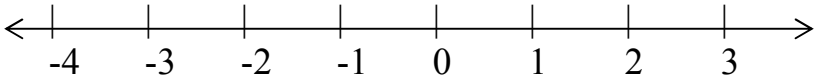
An arrow showing starting at 1 and subtracting 3.



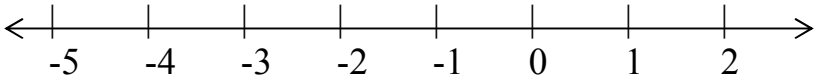
An arrow showing starting at -2 and subtracting 3.



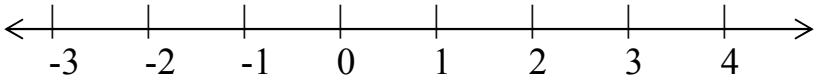
practice: Draw an arrow showing subtraction of 2. (Start at 0.)



Draw an arrow showing starting at -2 and subtracting 2.



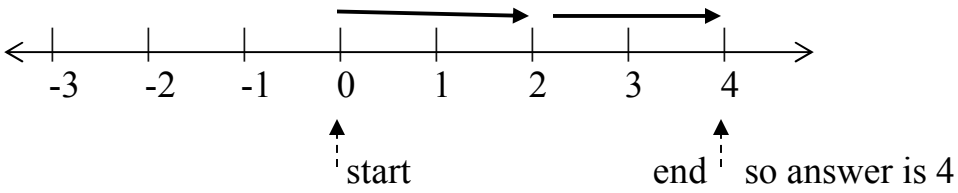
Draw an arrow showing starting at 3 and subtracting 2.



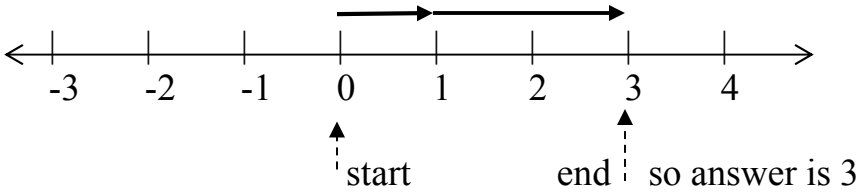
Study the following.

Addition problems can be shown by starting at 0 and drawing an arrow to the **right** for the first number, and then from there, another arrow to the **right** to show the number being added. Your answer is where you end up. Examples:

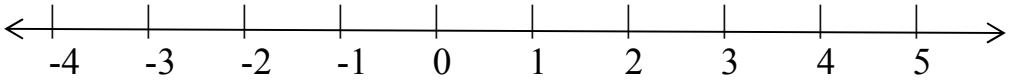
examples:
Arrows showing the addition problem 2 + 2 = 4.



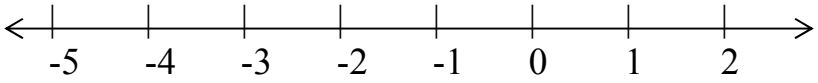
Arrows showing the addition problem 1+ 2 = 3.



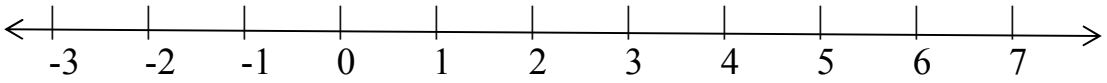
practice: Draw arrows showing 2 + 3 = 5



Draw arrows showing 1 + 1 = 2



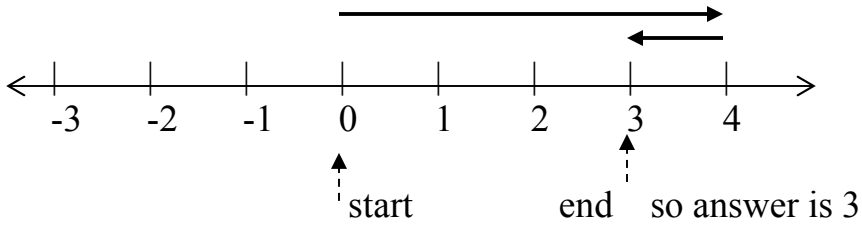
Draw arrows showing 3 + 3 = 6



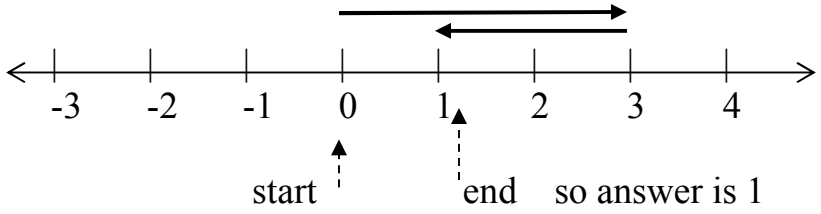
Study the following.

Subtraction problems can be shown by starting at 0 and drawing an arrow to the **right** for the first number, and then from there, another arrow to the **left** to show the number being subtracted. Your answer is where you end up. Examples:

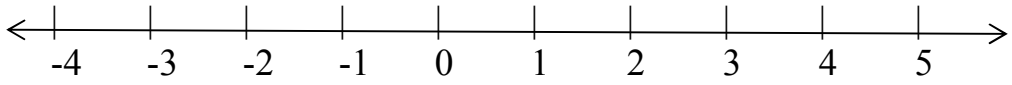
examples:
Arrows showing the subtraction problem 4 – 1 = 3.



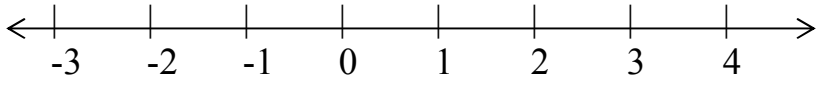
Arrows showing the subtraction problem 3 – 2 = 1.



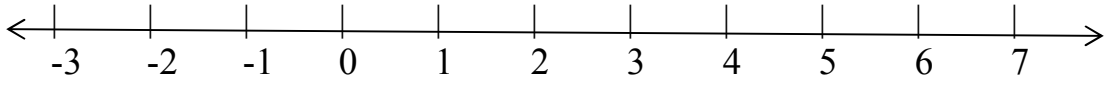
practice: Draw arrows showing 5 – 1 = 4



Draw arrows showing 3 – 3 = 0

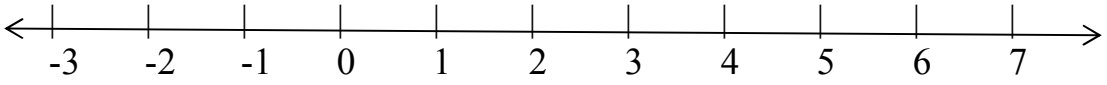


Draw arrows showing 7 – 5 = 2

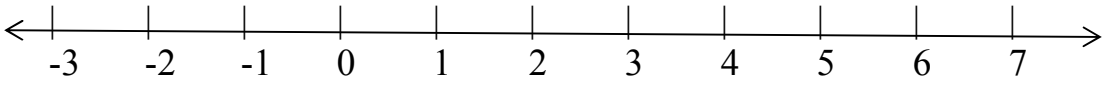


What is the addition or subtraction problem shown?

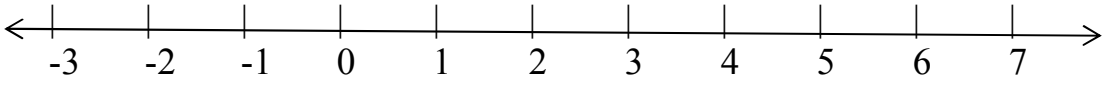
1. 1 + 4 = 5



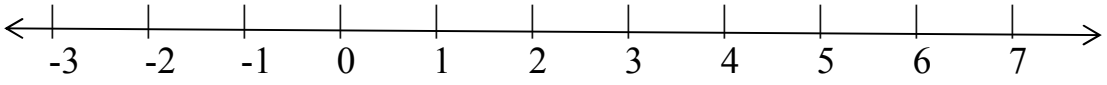
2.



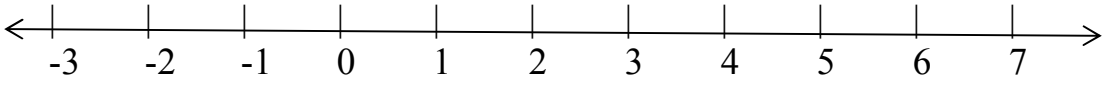
3.



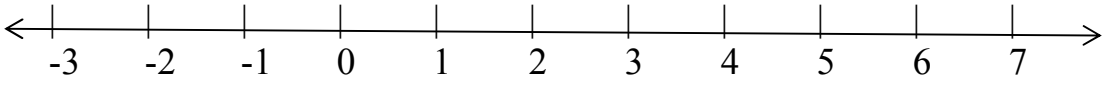
4.



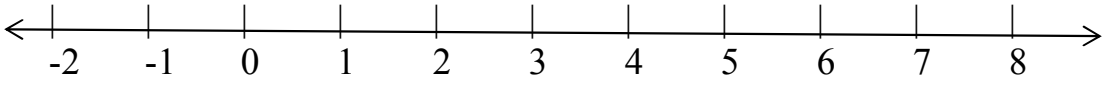
5.



6.

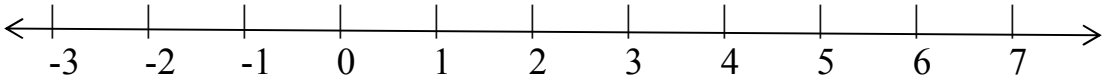


7.

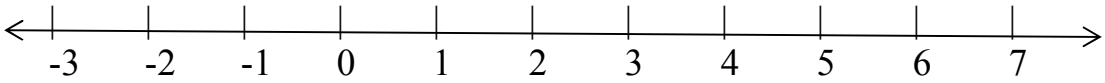


Solve the following by drawing arrows on each number line.

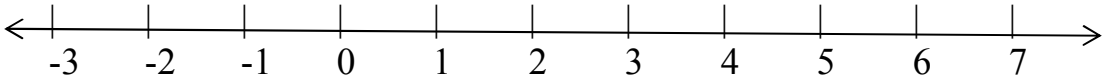
1. 6 – 4 =



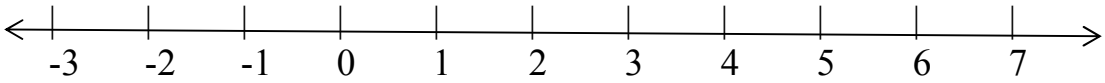
2. 7 – 1 =



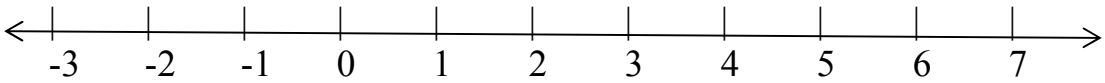
3. 5 + 2 =



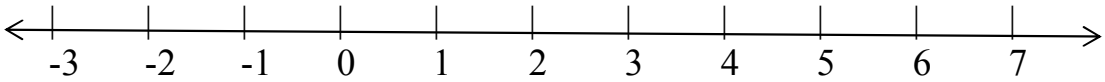
4. 5 – 4 =



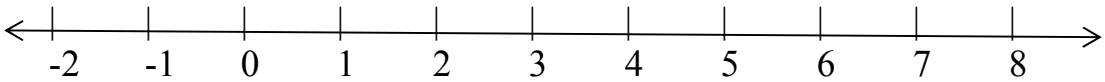
5. 4 + 3 =



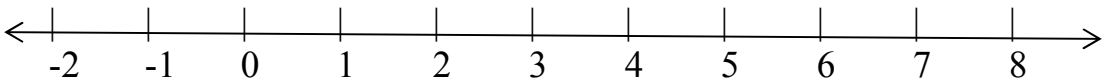
6. 3 – 1 =



7. 2 + 6 =



8. 8 – 3 =



Use the number lines in Appendix A to solve the following. <u>Be sure to use the number lines</u> even if you already know the answer, since this method will help you to solve harder problems later on.

1. $4 + 2 =$

2. $9 + 3 =$

3. $10 – 5 =$

4. $7 + 5 =$

5. $8 – 8 =$

6. $2 + 5 =$

7. $12 – 8 =$

8. $10 – 4 =$

9. $8 + 4 =$

10. $5 + 6 =$

Study the following.

A positive number added to a positive number is a positive number.

Examples: $2 + 3 = 5$
$1 + +5 = 6$
$+3 + +6 = 9$

Solve.

1. $3 + 6 =$

2. $5 + 2 =$

3. $10 + 2 =$

4. $+6 + 2 =$

5. $+3 + 1 =$

6. $7 + +2 =$

7. $+1 + 3 =$

8. $4 + +2 =$

9. $+6 + +1 =$

10. $+8 + +2 =$

Study the following.

Regular subtraction problems like the ones you learned in elementary school look like this. The first number is bigger than the second.

Examples: $5 - 2 = 3$
$6 - 4 = 2$

Solve.

1. $10 - 3 =$

2. $8 - 3 =$

3. $5 - 1 =$

4. $4 - 4 =$

5. $3 - 1 =$

Study the following.

Even if the plus signs are shown for the positive numbers, these are still "regular" subtraction problems.

Examples: $+5 - 2 = 3$
$5 - +2 = 3$
$+5 - +2 = 3$

Show three ways to write the following

1. ten minus three equals seven

2. six minus two equals four

3. seven minus one equals six

Study the following.

( ) These symbols are called parentheses. They are used to enclose numbers and/or symbols in math.
Parentheses (puh-ren-thuh-seez) means two or more of these symbols ( ).
Parenthesis (puh-**ren**-thuh-siss) means one of these symbols (.

Say each word out loud and write it in the blank.

parentheses _____
parenthesis_____

Write each definition in your own words.
parentheses

parenthesis

Study the following.

Parentheses can be used to more clearly show a positive or negative number together with its sign.

Examples: (-1) means negative one
(+2) means positive two

4 + +1 can be written 4 + (+1)
10 – +2 can be written 10 – (+2)
+6 + +2 can be written (+6) + (+2)
-4 + -3 can be written (-4) + (-3)

Draw in the parentheses.

1. +1 + +4

2. 8 – +2

3. –2 – +1

4. –17 + +3

5. –2 + –3

6. +2 + –5

Write 4 examples of your own using parentheses.

1.

2.

3.

4.

Study the following.

Parentheses also show multiplication.

Examples: (2)(3)
(2)3
2(3) these all mean two times three.

2(-3) means two **times** negative three
(it does **not** mean 2 minus 3.)
-3(2)
(-3)(2)
(-3)2 these all mean negative three **times** two

Notice above that two parentheses touching, or a number touching a parentheses, shows times.

Write three ways to show the following.

1. four times five

2. six times two

3. negative seven times three

4. negative nine times ten

Write 4 examples of your own using parentheses.

1.

2.

3.

4.

Study the following.

Sometimes parentheses are put around a positive number and don't show multiplication. They are extra and are not needed.

Examples: (2) + (3) = 5 means the same as 2 + 3 = 5
4 - (3) = 1 means the same as 4 - 3 = 1

Notice above how the parentheses are not touching each other or a number so it is not times.

Write without parentheses.

1. (3) + (7) = 10

2. (9) - (3) = 6

Show the following two different ways using or not using parentheses.

1. two plus five

2. six minus three

3. eight minus one

Solve. Some are multiplication and some are addition or subtraction.

1. (8) – (3) =
2. (8)(3) =
3. (4)(2) =
4. 4 - (2) =
5. (6)1 =
6. (6) + 1 =
7. 7(2) =
8. 8 + (2) =
9. 8 - (2) =
10. (5)(5) =

Study the following.

Adding two negative integers.

Remember integers are positive numbers, negative numbers, and zero.
Examples: -5, -4, 0, 5, 17 are all integers

Negative integers are negative numbers like -5, -7, (-4), (-20) and can be written in parentheses for clarity.

When adding two negative integers you first add the numbers (without the negative signs), and then put a negative sign in front of the answer.

Examples: (-3) + (-1) = -4
-10 + (-5) = -15
-1 + -1 = -2

Solve.

1. (-4) + (-5) =
2. (-6) + -1 =
3. -2 + -5 =
4. -7 + (-7) =

Write three ways using or not using parentheses and solve.

1. negative 3 plus negative 10

2. negative 4 plus negative 4

3. negative six plus negative two

Make up 3 examples of your own and solve.

1.

2.

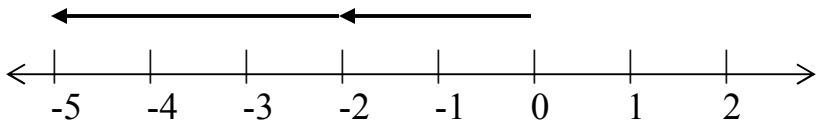
3.

Study the following.

Adding two negative integers can be shown on a number line as follows.

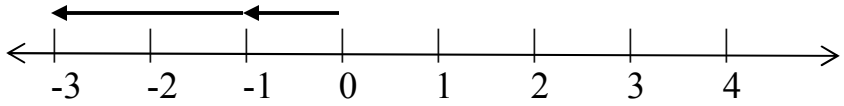
Examples:

Draw arrows showing (-2) + (-3) = -5



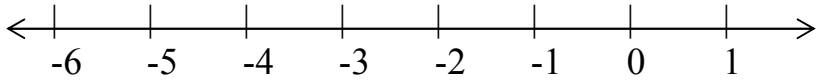
Start at zero.
Then for the (-2) go left 2.
Then from there for the (-3) go left three.
You end up at -5 so that is the answer.

Draw arrows showing -1 + (-2) = -3

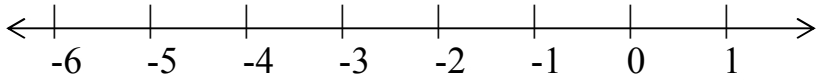


Show the following on the number lines.

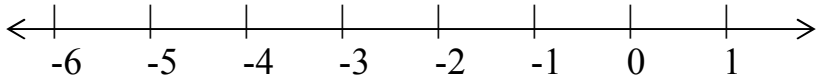
1. (-2) + (-2) = -4



2. (-1) + -5 = -6

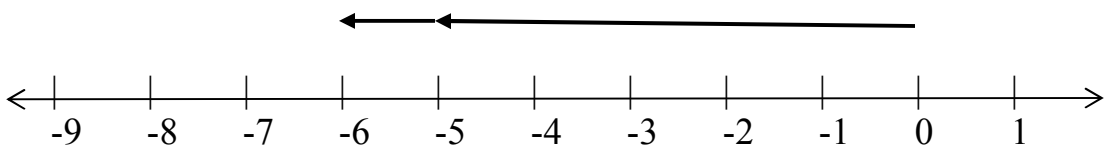


3. -4 + (-1) = -5

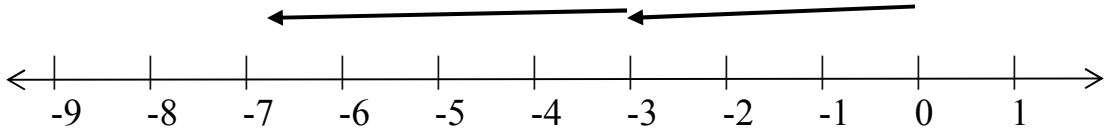


What is the addition problem shown?

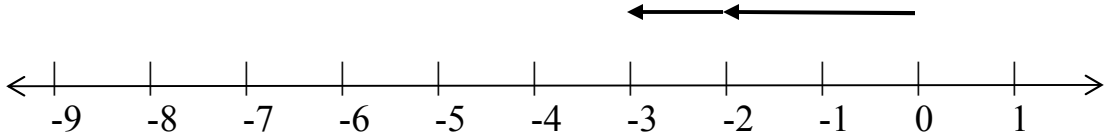
1. (-5) + (-1) = -6



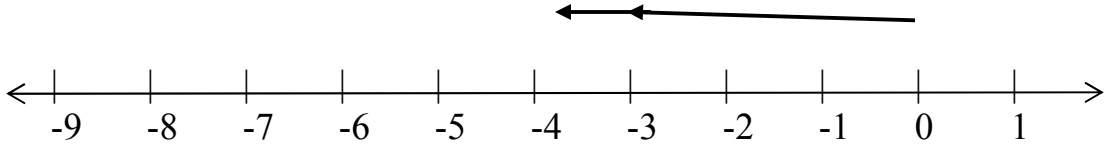
2. ____



3. ____



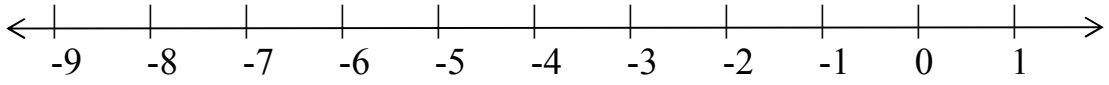
4. ____



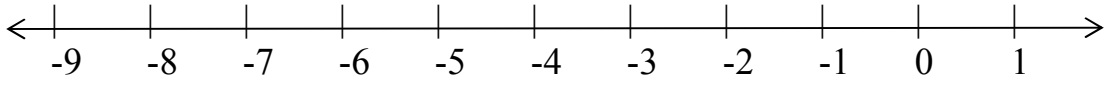
5. ____

Solve using the number line.

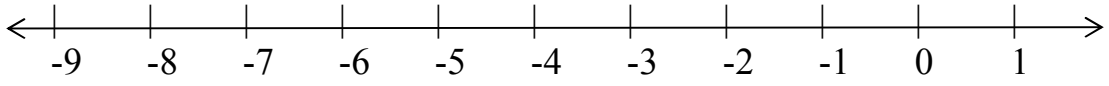
1. (-3) + (-1) =



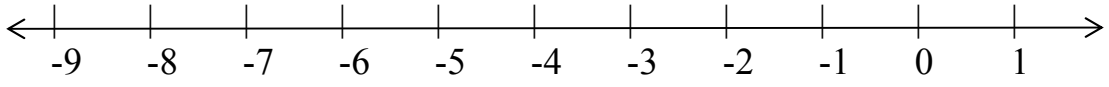
2. -1 + -1 =



3. -7 + (-2) =



4. (-4) + (-3) =

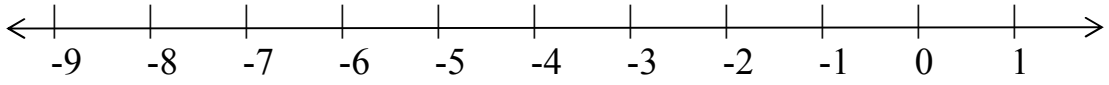


Fill in the blanks with the words "right" or "left".

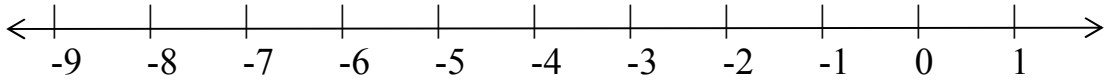
1. To show a positive integer on the number line you move _____.
2. To show a negative integer on the number line you move _____.
3. To show addition on the number line you move _____.
4. To show subtraction on the number line you move _____.
5. To show plus on the number line you move _____.
6. To show minus on the number line you move _____.

Make up 3 examples of adding negative integers, and solve.

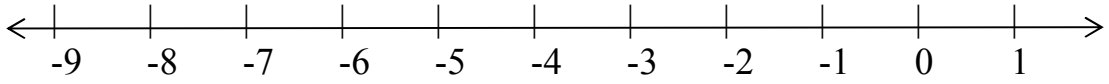
1.



2.



3.



Use the number lines in Appendix A to solve the following. <u>Be sure to use the number lines</u> even if you already know the answer, since this method will help you to solve harder problems later on.

1. -3 + -2 =

2. -9 + -3 =

3. -10 + (– 1) =

4. (-6) + (-5) =

5. -8 + (-1) =

6. (-2) + -5 =

7. -3 + (– 8) =

8. -4 + -4 =

9. -8 + (-4) =

10. (-7) + (-5) =

Study the following.

Subtraction can be written as adding a negative.

Example: 10 – 4 can be written 10 + (-4)

Show another way to write the following.

1. 8 – 2
2. 6 – 1
3. 7 – 4
4. 9 – 8

Study the following.

The reverse is also true. Adding a negative can be written as subtraction.

Examples: 8 + (-2) can be written 8 - 2
6 + -1 can be written 6 - 1

Show another way to write the following.

1. 7 + (– 2)
2. 6 + -5
3. 7 + (-7)
4. 9 + -3

Solve. Show it another way first if it helps you to solve it.

1. 8 – 2 =
2. 6 – 4 =
3. 10 + (-3) =
4. 8 + (-1) =
5. 6 – 2 =
6. 3 – 2 =
7. 5 + -1 =
8. 8 + -3 =
9. 8 – 4 =
10. 6 + (-1) =

Study the following.

Another type of problem showing subtraction can be written as adding a negative.

Example: -8 – 2 can be written -8 + (-2)
(-3) – 1 can be written (-3) + (-1)

Write the following as adding a negative.

1. -6 – 3
2. (-4) – 1
3. (-8) – 4
4. -6 – 5

Solve. Show as an addition problem first.

	addition problem	answer
1. -6 – 2 =	-6 + (-2) =	-8
2. -8 – 3 =		
3. (-7) – 1 =		
4. -9 – 6 =		
5. -10 -3 =		
6. (-5) – 6 =		
7. -2 – 1 =		
8. (-3) – 2 =		

Solve. Skip the step of changing to an addition problem.

1. -6 – 1 =
2. -8 – 3 =
3. -2 – 1 =
4. -6 – 4 =
5. -10 – 6 =

Describe the pattern in solving the above problems.

_____

_____

Solve some more problems using the pattern.

1. -9 – 2 =
2. -3 – 10 =
3. -8 – 3 =
4. - 10 – 4 =
5. -5 – 5 =

Solve. These are the same as above with parentheses added.

1. (-8) – 3 =
2. (-1) – 1 =
3. (-4) – 2 =
4. (-10) – 5 =
5. (-9) – 8 =

Study the following.

Adding and Subtracting Integers Review so far.

Addition - Both Positive numbers	5 + 4 = 9 +5 + 4 = 9 + 5 + (+4) = 9 (5) + (4) = 9 +5 + +4 = 9
Subtraction – Regular subtraction (First number is larger.)	5 – 4 = 1 +5 – 4 = 1 (+5) – (+4) = 1 5 – (4) = 1 +5 – +4 = 1
Subtraction – Regular subtraction. Written as Adding a Negative.	5 + (-4) = 1 +5 + (-4) = 1 5 + -4 = 1 (5) + (-4) = 1
Adding two Negative numbers.	(-5) + (-4) = -9 -5 + -4 = -9 (-5) + -4 = -9 -5 + (-4) = -9
Adding Two Negative Numbers. Written as a Subtraction Problem.	-5 - 4 = -9 (-5) - 4 = -9 -5 - (4) = -9 -5 - (+4) = -9 (-5) - (+4) = -9

Make up three different problems with the following answers.

1. Answer is 6

2. Answer is 10

3. Answer is 5

Make up two different problems with the following answers.

1. Answer is -6

2. Answer is -10

3. Answer is -5

Show the following on number lines.

1. 5 + 4 = 9

2. 5 - 4 = 1

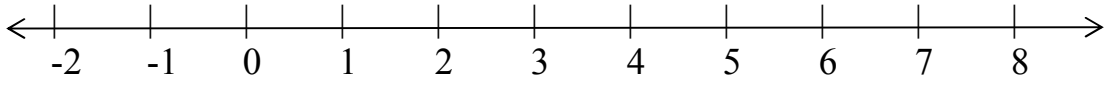
3. 5 + (-4) = 1

4. -5 + -4 = -9

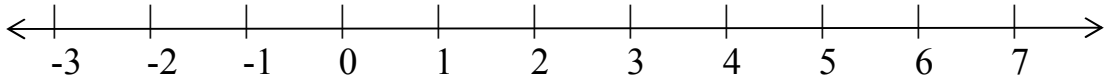
5. -5 - 4 = -9

Solve using the number line.

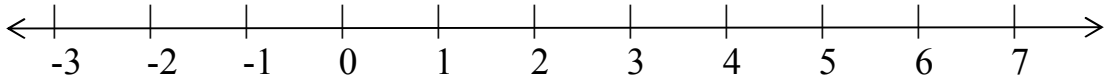
1. $6 + 2 =$



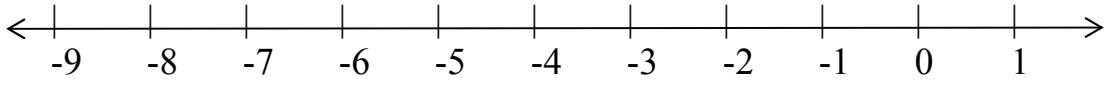
2. $7 - 3 =$



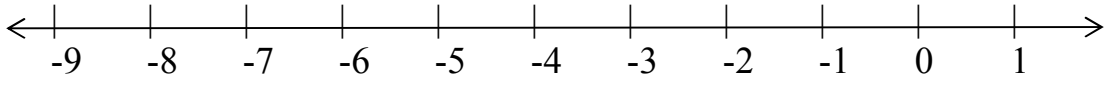
3. $5 + (-1) =$



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



5. $-3 - 2 =$



Use the number lines in Appendix A to solve the following. <u>Be sure to use the number lines</u> even if you already know the answer, since this method will help you to solve harder problems later on.

1. -1 + -2 =

2. 11 + -2 =

3. (-4) - (+2) =

4. (+2) + (8) =

5. -8 + (-1) =

6. 12 - (4) =

7. -7 - 6 =

8. 6 + (-1) =

9. 3 – 1 =

10. 8 + 4 =

Solve.

1. 8 + 2 =
2. 7 + 1 =
3. 7 – 2 =
4. 7 – 3 =
5. (-5) + (-3) =
6. (-6) + (-1) =
7. -3 - 4 =
8. -2 -3 =
9. 6 + (-3) =
10. 4 + (-2) =
11. +10 + 3 =
12. +8 + (+1) =
13. -6 + (-3) =
14. (+10) – (+4) =
15. +6 + -4 =
16. 10 - 1 =
17. 8 + (-8) =
18. -8 + -8 =
19. (5) – (2) =
20. +3 – (+1) =

Study the following.

Subtracting a negative number.

Subtracting a negative number is the same as adding.

Examples: 10 – -4 is the same as 10 + 4
10 – (-4) is the same as 10 + 4

When you see two negatives next to each other (10 – -4)
Or two negatives with a parenthesis between them (10 – (-4)),
You change the two negatives to one large plus sign by penciling over the two minus signs.

Examples: 10 – -4 becomes 10 + 4
10 – (-4) becomes 10 + (+ 4)

Then if you want to you can rewrite the problem as 10 + 4

Next you solve the problem. 10 + 4 = 14

Solve. First rewrite as an addition problem.

	Rewrite as addition	answer
1. 9 – (-3) =		
2. 10 – (-4) =		
3. 6 - -2 =		
4. 3 - -7 =		
5. 8 – (-7) =		
6. 4 – (-2) =		
7. 10 – (-1) =		
8. 8 - -4 =		

Make up two different problems with the following answers.
One addition, and one subtracting a negative.

Answer	Addition problem	Subtracting a negative
1. 3	2 + 1 = 3	2 – (-1) = 3
2. 5	3 + 2 = 5	3 - -2 = 5
3. 7		
4. 10		
5. 12		
6. 8		
7. 4		
8. 9		
9. 6		
10. 11		

Solve.

1. 4 - -8 =

2. 10 – (-6) =

3. (+5) – (-4) =

4. (4) - -2 =

5. 7 – (-7) =

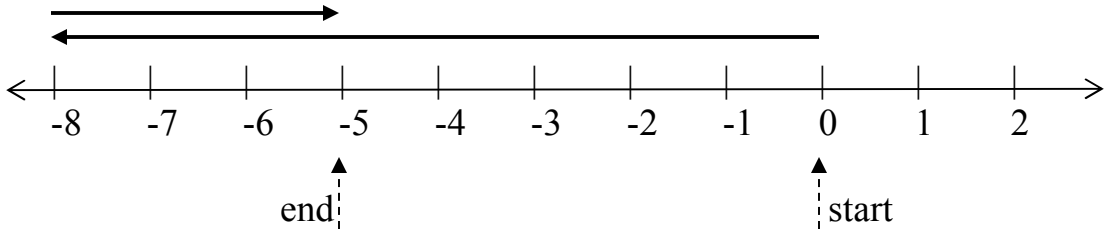
6. 12 - -2 =

Study the following.

Adding a negative and a positive when the **negative number is larger**.
Part 1.

Example: (-8) + 3 = -5

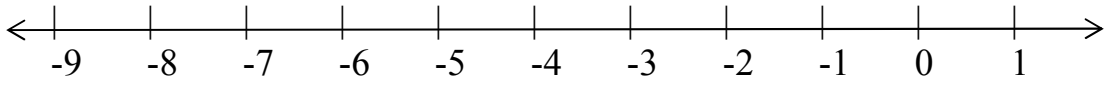
This is how to solve this on a number line.



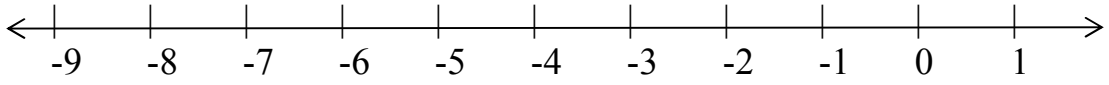
Start at zero.
Then for the (-8) go left 8.
Then from there for the 3 go right 3.
You end up at -5 so that is the answer.

Solve using the number line.

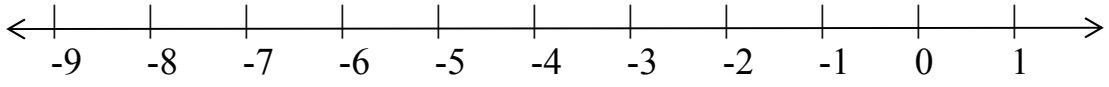
1. (-3) + (1) =



2. -9 + 2 =



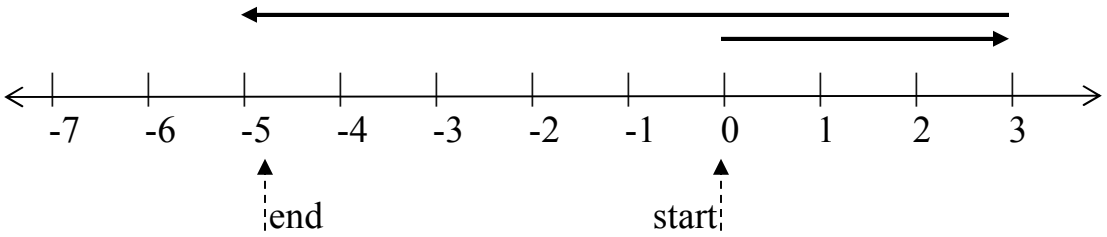
3. (-7) + 3 =



Adding a negative and a positive when the **negative number is larger**. Part 2.

Example: 3 + (-8) = -5

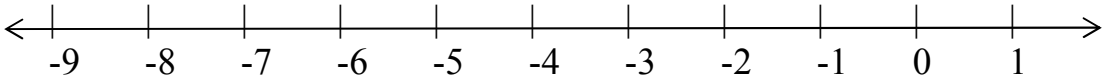
This is how to solve this on a number line.



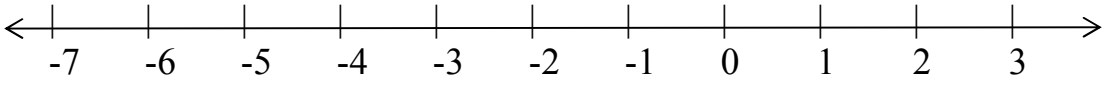
Start at zero.
Then for the 3 go right 3..
Then from there for the -8 go left 8.
You end up at -5 so that is the answer.

Solve using the number line.

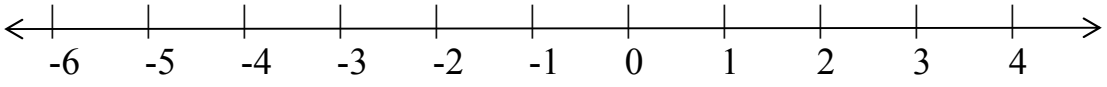
1. 1 + -3 =



2. 2 + (-9) =



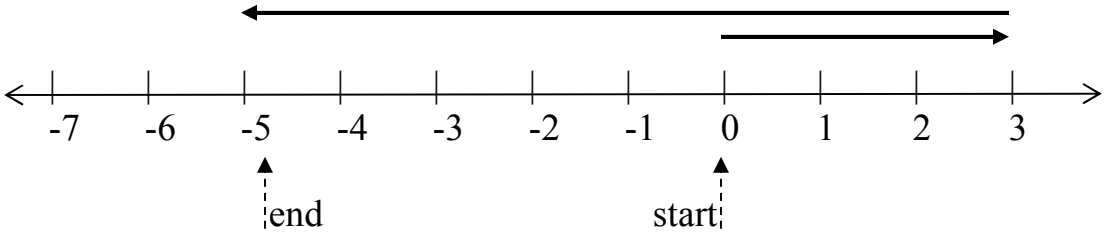
3. (3) + (-7) =



Adding a negative and a positive when the **negative number is larger**.
Part 3.

Example: 3 - 8 = -5
This is the same as 3 + (-8) = -5 which is part 2 above.

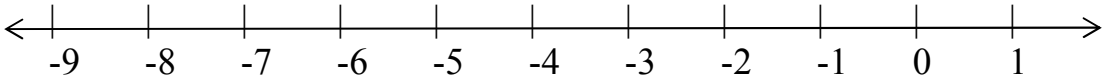
This is how to solve this on a number line.



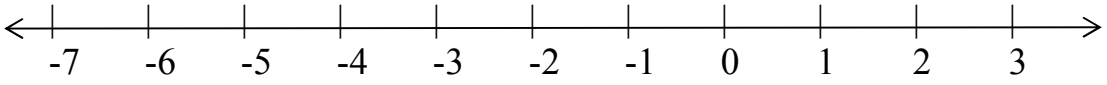
Start at zero.
Then for the 3 go right 3..
Then from there for the -8 go left 8.
You end up at -5 so that is the answer.

Solve using the number line.

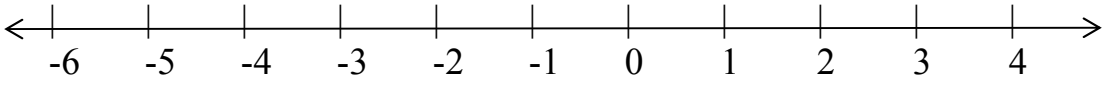
1. 1 - 4 =



2. +2 – 8 =



3. (3) - 6 =



Study the following.

Review of parts 1, 2, and 3 of
Adding a negative and a positive when the ***negative*** **number is larger**.

All these problems give the same answer.

-5 + 1 = -4
1 + -5 = -4
1 - 5 = -4

Notice how you are losing 5, and gaining 1 in all three problems.

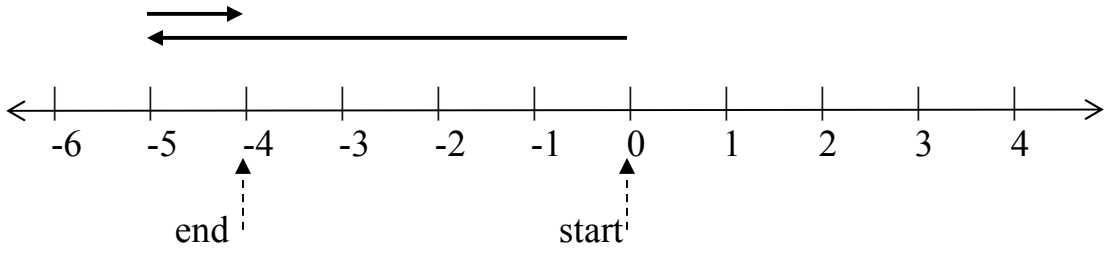
(-5) + 1 = -4 -5 (+ 1) = -4

1 + (-5) = -4 (1) + -5 = -4

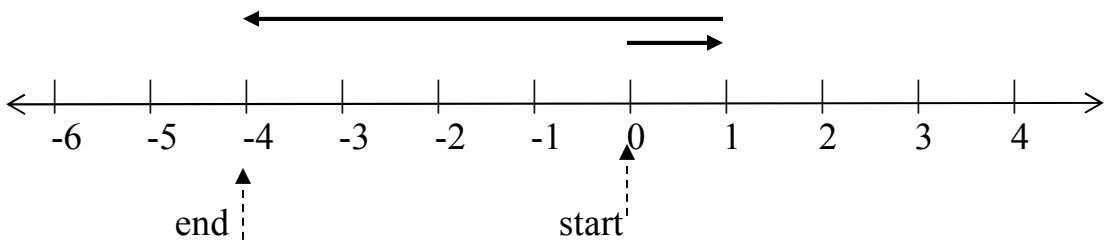
1 (- 5) = -4 (1) - 5 = -4

When you graph you get the same answer whether you start with the losing 5 (the -5) first or the gaining 1 (the +1)first.

-5 + 1 = -4

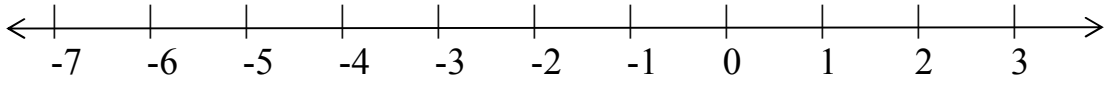


1 + -5 = -4

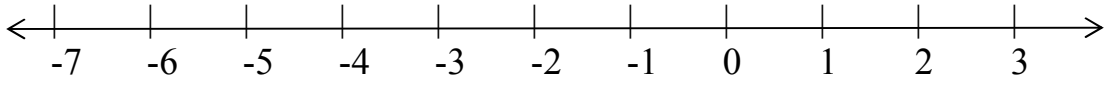


Solve using the number line.

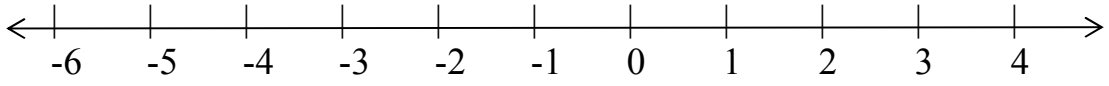
1. 2 - 4 =



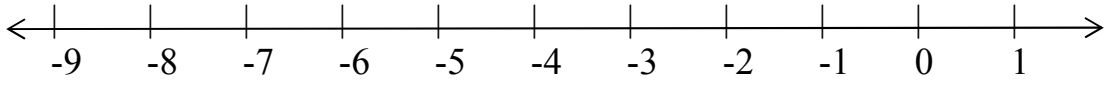
2. -5 + 2 =



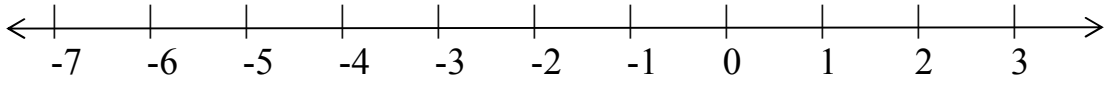
3. (3) + (- 6) =



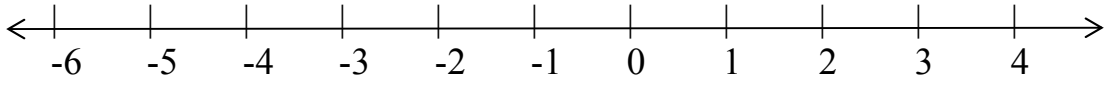
4. +4 – 9 =



5. +2 + – 8 =



6. (-6) + 3 =



Study the following.

To solve problems of adding a negative and a positive without using a number line do the following.

Step 1. Since one number is negative and one number is positive, you find the difference between the two numbers first.
Step 2. Then, the sign of the bigger number, will be the sign of the answer;

Example: -6 + 2 =

Step 1. the difference between 6 and 2 is 4.
Step 2. the bigger number is 6 which is a negative, so the answer will be a negative.

The answer is -4.

Solve by filling in the blanks.

1. -4 + 1 =
   Step 1:The difference between ___ and ____ is ____.
   Step 2: The larger number is ____. Its sign is ____.
   The answer is _____.

2. 5 - 9 =
   Step 1:The difference between ___ and ____ is ____.
   Step 2: The larger number is ____. Its sign is ____.
   The answer is _____.

3. 6 + -11 =
   Step 1:The difference between ___ and ____ is ____.
   Step 2: The larger number is ____. Its sign is ____.
   The answer is _____.

4. -6 + 2 =
   Step 1:The difference between ___ and ____ is ____.
   Step 2: The larger number is ____. Its sign is ____.
   The answer is _____.

Make up three different problems with the following answers.
Use the same two numbers for each set of three answers. For example problem 1. uses 5 and 2.

Answer	-? + ? = answer	? - ? = answer	? + (-?) = answer
1. -3	-5 + 2 = -3	2 – 5 = -3	2 + (-5) = -3
2. -5			
3. - 7			
4. -10			
5. -1			
6. -8			
7. -4			
8. -9			
9. -2			

Use the number lines in Appendix A to solve the following. <u>Be sure to use the number lines</u> even if you already know the answer.

1. 1 + -2 =

2. -11 + 2 =

3. 1 - (+2) =

4. (+2) + (-8) =

5. -8 + 1 =

6. 3 - (4) =

7. -7 + 6 =

8. 6 + (-10) =

9. 3 – 9 =

10. -12 + 4 =

Solve without using a number line. Show the steps.

	Step 1 (difference)	Step 2 (sign of larger)	Write the answer.
1. -5 + 2 =	Diff of 5 and 2 is 3	-5 larger so –	-3
2. 3 – 7 =	Diff. of 3 and 7 is 4 (7 – 3 = 4)	-7 larger so –	-4
3. 1 + (-2) =	1	–	-1
4. -8 + 2 =	6	–	-6
5. -4 + 1 =			
6. 10 + (-12) =			
7. 4 – 6 =			
8. 1 – (3) =			
9. -5 + 3			
10. -8 + (2)			

Solve.

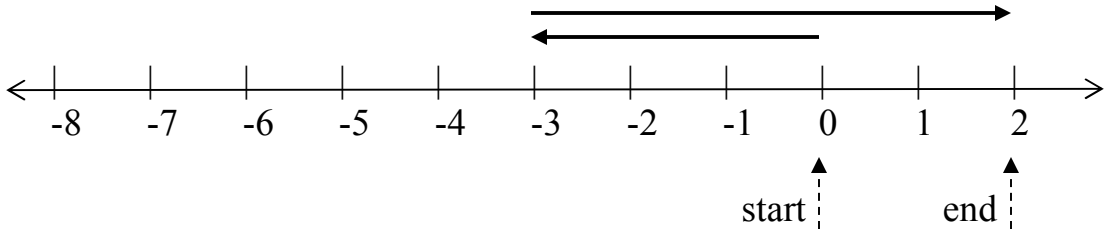
1. -5 + 3 =
2. -8 + 4 =
3. 3 + -7 =
4. 4 + -10 =
5. +5 + -6 =
6. 3 – 9 =
7. 1 – 8 =
8. +2 – 7 =
9. +4 – (+4) =
10. (-5) + 2 =
11. (8) + (-12) =
12. (4) – (11) =
13. (+8) + (-12) =
14. 1 – 2 =
15. 1 + -2 =
16. -2 + 1 =
17. (-2) + (1) =
18. 7 – 8 =
19. (7) + -8 =
20. -3 + 2 =

Study the following.

Adding a negative and a positive when the ***positive*** **number is larger**.
Part 1.

Example: (-3) + 5 = 2

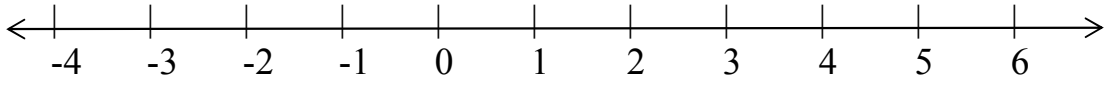
This is how to solve this on a number line.



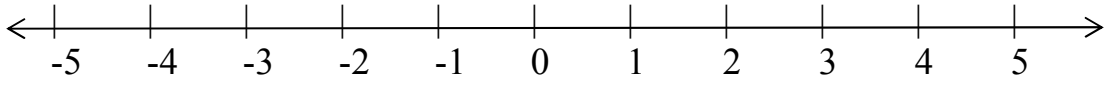
Start at zero.
Then for the (-3) go left 3.
Then from there for the 5 go right 5.
You end up at 2 so that is the answer.

Solve using the number line.

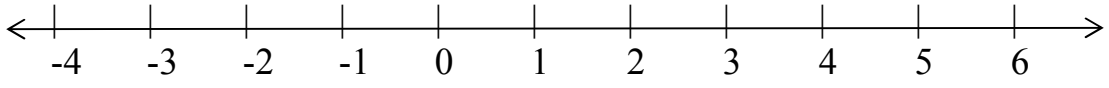
1. (-3) + (9) =



2. -1 + 4 =



3. (-3) + 7 =

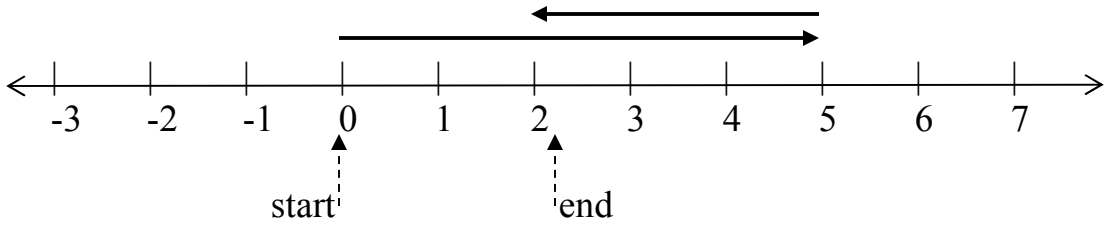


Study the following.

Adding a negative and a positive when the ***positive*** **number is larger**.
Part 2.

Example: 5 + (-3) = 2 (Notice this is the same as 5 – 3 which is regular subtraction.)

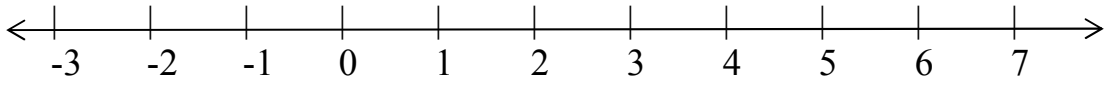
This is how to solve this on a number line.



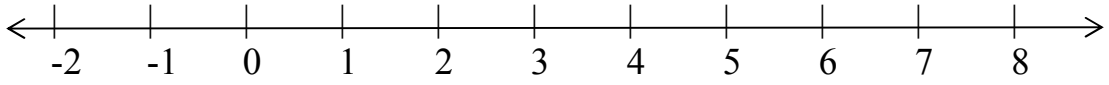
Start at zero.
Then for the 5 go right 5.
Then from there for the -3 go left 3.
You end up at 2 so that is the answer.

Solve using the number line.

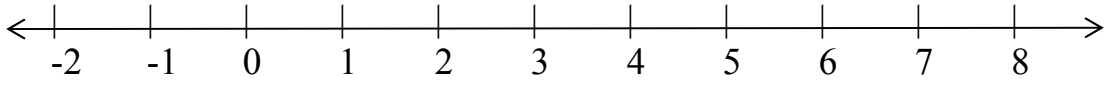
1. 4 + -3 =



2. 8 + (-2) =



3. (6) + (-1) =

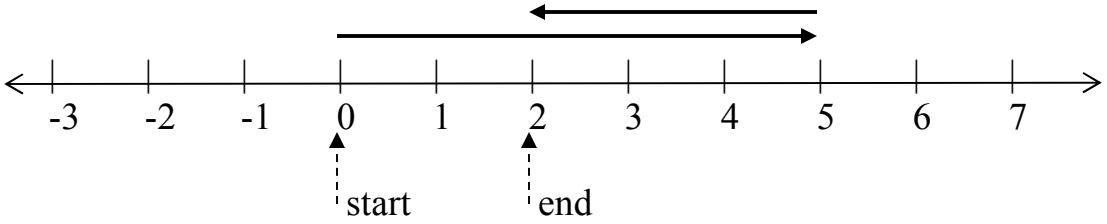


Study the following.

<u>Adding a negative and a positive when the ***positive*** **number is larger**.
Part 3.</u>

Example: 5 – 3 = 2 (regular subtraction)
This is the same as 5 + (-3) = 2 which is part 2 above.

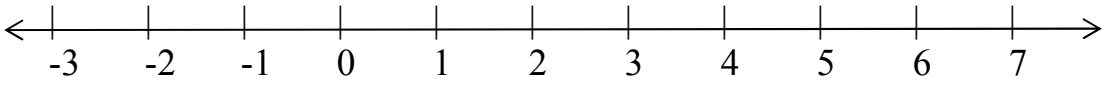
This is how to solve this on a number line.



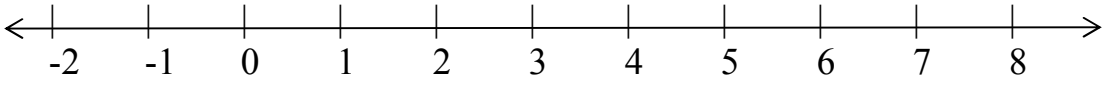
Start at zero.
Then for the 5 go right 5.
Then from there for the –3 go left 3.
You end up at 2 so that is the answer.

Solve using the number line.

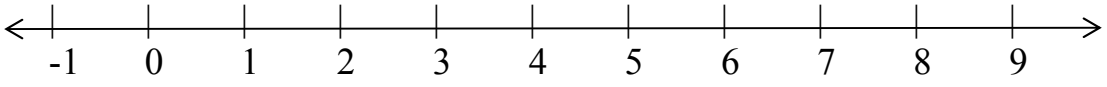
1. 7 – 4 =



2. +8 – 7 =



3. (6) – 2 =



Study the following.

Review of parts 1, 2, and 3 of
Adding a negative and a positive when the ***positive*** **number is larger**.

All these problems give the same answer.

$-1 + 5 = 4$
$5 + (-1) = 4$
$5 - 1 = 4$

Notice how you are gaining 5, and losing 1 in all three problems.

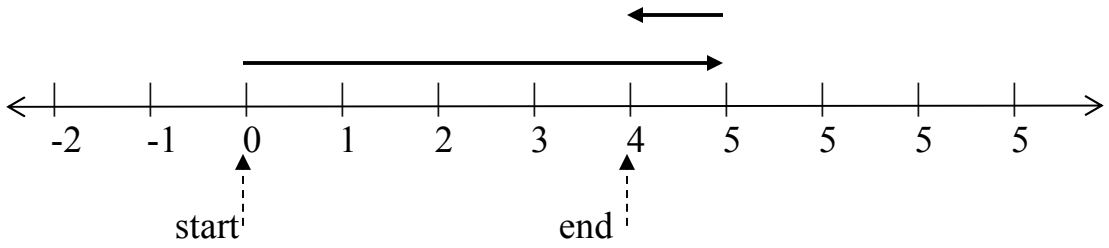
$-1 + 5 = 4$ $\quad$ $-1 + 5 = 4$

$5 + (-1) = 4$ $\quad$ $5 + (-1) = 4$

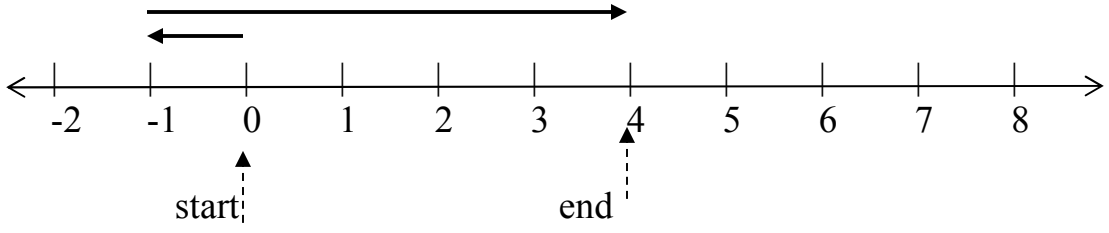
$5 - 1 = 4$ $\quad$ $5 - 1 = 4$

When you graph you get the same answer whether you start with the gaining 5 (the +5) first or the losing 1 (the –1)first.

$5 - 1 = 4$

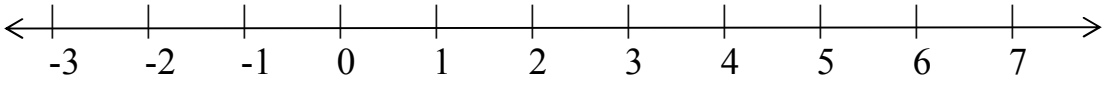


$-1 + 5 = 4$

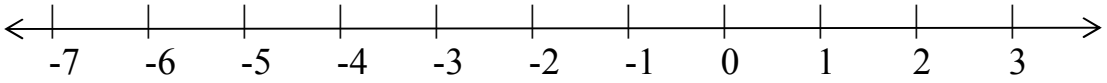


Solve using the number line.

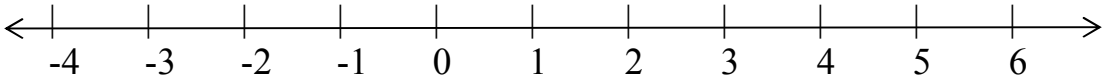
1. 6 - 4 =



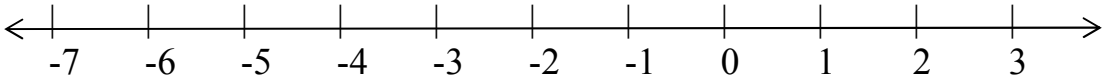
2. -5 + 7 =



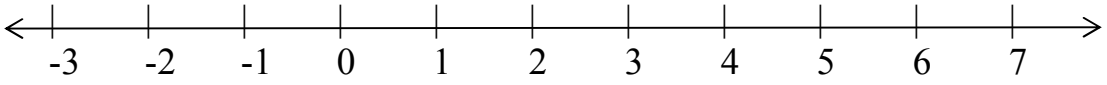
3. (6) + (- 3) =



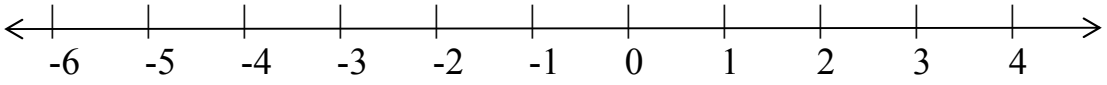
4. +3 – 1 =



5. +5 + – 4 =



6. (-6) + 8 =



Study the following.

To solve problems of adding a negative and a positive without using a number line do the following.

Step 1. Since one number is negative and one number is positive, you find the difference between the two numbers first.
Step 2. Then, the sign of the bigger number, will be the sign of the answer;

Example: -2 + 6 =

Step 1. the difference between 6 and 2 is 4.
Step 2. the bigger number is 6 which is a positive, so the answer will be a positive.

The answer is +4 or just plain 4.

Solve by filling in the blanks.

1. -4 + 10 =
   Step 1:The difference between ___ and ____ is ____.
   Step 2: The larger number is ____. Its sign is ____.
   The answer is _____.

2. 12 - 9 =
   Step 1:The difference between ___ and ____ is ____.
   Step 2: The larger number is ____. Its sign is ____.
   The answer is _____.

3. 6 + (-4) =
   Step 1:The difference between ___ and ____ is ____.
   Step 2: The larger number is ____. Its sign is ____.
   The answer is _____.

4. -6 + 9 =
   Step 1:The difference between ___ and ____ is ____.
   Step 2: The larger number is ____. Its sign is ____.
   The answer is _____.

Make up three different problems with the following answers.
Use the same two numbers for each set of three answers. For example problem 1. uses 5 and 2.

Answer	-? + ? = answer	? - ? = answer	? + (-?) = answer
1. 3	-2 + 5 = 3	5 – 2 = 3	5 + (-2) = 3
2. 5			
3. 7			
4. 10			
5. 1			
6. 8			
7. 4			
8. 9			
9. 2			

Use the number lines in Appendix A to solve the following. <u>Be sure to use the number lines</u> even if you already know the answer.

1. 8 + -2 =

2. -11 + 12 =

3. 4 - (+2) =

4. (+10) + (-8) =

5. -8 + 12 =

6. 7 - (4) =

7. -7 + 9 =

8. 6 + (-1) =

9. 3 – 2 =

10. -3 + 6 =

Solve without using a number line. Show the steps.

	Step 1 (difference)	Step 2 (sign of larger)	Write the answer.
1. -2 + 5 =	Diff of 5 and 2 is 3	5 larger so +	+3 or 3
2. 7 – 3 =	Diff. of 7 and 3 is 4	7 larger so +	+4 or 4
3. 2 + (-1) =	1	+	+1
4. -2 + 8 =	6	+	6
5. -2 + 8 =			
6. 10 + (-7) =			
7. 4 – 3 =			
8. 5 – (3) =			
9. -5 + 10			
10. -8 + (12)			

Solve.

1. -5 + 8 =
2. -8 + 13 =
3. 9 + -7 =
4. 11 + -10 =
5. +15 + -6 =
6. 10 – 9 =
7. 10 – 3 =
8. +2 – 1 =
9. +7 – (+4) =
10. (-5) + 9 =
11. (8) + (-3) =
12. (15) – (11) =
13. (+8) + (-2) =
14. 3 – 2 =
15. 5 + -2 =
16. -2 + 4 =
17. (-2) + (13) =
18. 7 – 1 =
19. (7) + -5 =
20. -3 + 9 =

Review of adding a negative and a positive. Either the negative number could be larger, or the positive number could be larger.

Use the number lines in Appendix A to solve the following. Be sure to use the number lines even if you already know the answer.

1. 6 + -1 =

2. -10 + 6 =

3. 7 - (+2) =

4. (+3) + (-9) =

5. -5 + 2 =

6. 7 - (1) =

7. -12 + 2 =

8. 7 + (-6) =

9. 1 – 2 =

10. -4 + 9 =

Solve without using a number line. Show the steps.

	Step 1 (difference)	Step 2 (sign of larger)	Write the answer.
1. -2 + 8 =	Diff. of 8 and 2 is 6	8 larger so +	+6 or 6
2. 3 – 8 =	Diff. of 8 and 3 is 5	-8 larger so –	–5
3. 2 + (-9) =	7	–	–7
4. –2 + 4 =	2	+	2
5. -7 + 8 =			
6. 4 + (-7) =			
7. 4 – 1 =			
8. 1 – (3) =			
9. -5 + 11 =			
10. -8 + (5) =			
11. 7 + -9 =			
12. -1 + 9 =			
13. 12 – 4 =			
14. 1 – 3 =			
15. 10 + (-7) =			

Solve.

1. -4 + 3 =
2. -8 + 6 =
3. 3 + -8 =
4. (11) + (-10) =
5. +15 + -4 =
6. 7 – 9 =
7. (10) – 8 =
8. +3 – 5 =
9. +8 – (+4) =
10. (-5) + 8 =
11. (1) + (-3) =
12. (3) – (11) =
13. (+7) + (-3) =
14. 4 – 2 =
15. 1 + -2 =
16. -2 + 1 =
17. (-10) + (6) =
18. 7 – 12 =
19. (6) + -5 =
20. -3 + 7 =

Study the following.

More problems with two negative signs next to each other, or two negative signs separated by one parenthesis.

Examples: 2 – -4 (two negative signs next to each other)
2 – (-5) (two negative signs separated by one parenthesis.)

To solve, change the two negatives to one positive and then solve the new problem.

Examples: 2 - -4 becomes 2 + 4 rewritten as 2 + 4 solve 2 + 4 = 6

2 – (-5) becomes 2 + 5 rewritten as 2 + 5 solve 2 + 5 = 7

-2 – -6 becomes -2 + 6 rewritten as -2 + 6 solve -2 + 6 = 4

-8 – -6 becomes -8 + 6 rewritten as -8 + 6 solve -8 + 6 = -2

Draw over the two negatives to make one positive.	Rewrite the problem.	Answer.
1. 3 + 8 =	3 + 8	11
2. 6 – (-2) =		
3. -1 – (-2) =		
4. -9 - -5 =		
5. 4 – (-1) =		
6. -7 - -5 =		
7. 5 - -4 =		
8. -6 – (-8) =		
9. (-2) – (-1) =		

Vocabulary Review.

Write each definition in your own words and show an example of each.

Word	Definition	Example
1. addition 2. difference 3. integer 4. operation 5. sign		

Study the following.

Summary of the three main types of addition of integers.

1. Adding two positive integers.

   Examples: 4 + 3 = 7
   4 - -3 = 7
   +4 + 3 = 7
   (4) + (+3) = 7

   Procedure: When adding ***two positive integers*** you **add** the numbers, and your answer is **positive**.

2. Adding two negative integers.

   Examples: -1 + -2 = -3
   (-1) + (-2) = -3
   -1 - 2 = -3

   Procedure: When adding ***two negative integers*** you **add** the numbers, and your answer is **negative**.

3. Adding a negative and a positive integer.

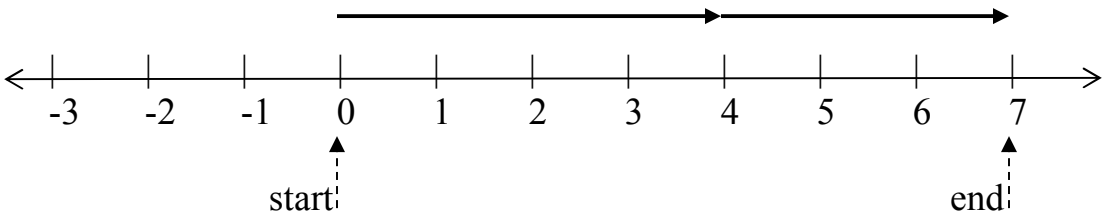
   Examples: -1 + 2 = 1
   2 – 1 = 1
   2 + (-1) = 1
   -1 - -2 = 1
   1 – 2 = -1
   1 + -2 = -1
   -2 + (1) = -1
   +1 – 2 = -1
   -2 – (-1) = -1

   Procedure: When adding ***a negative and a positive integer*** you **subtract** the numbers(find the difference), and your answer has the **sign of the larger number**.

Number lines showing the three main types of addition of integers.

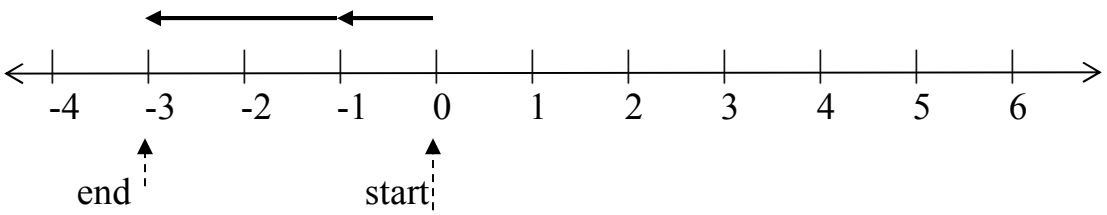
1. Adding two positive integers.

   Example: 4 + 3 = 7



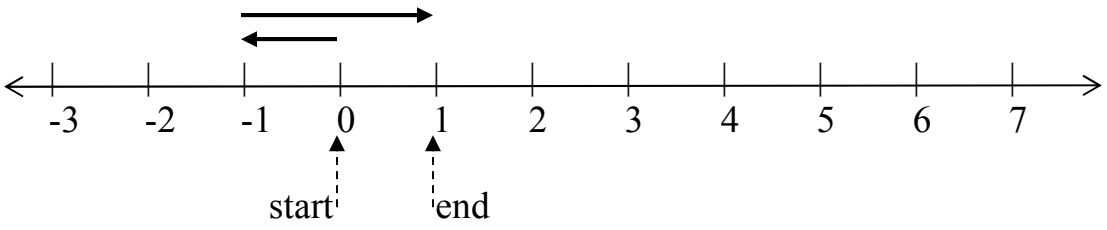
2. Adding two negative integers.

   Example: -1 + -2 = -3

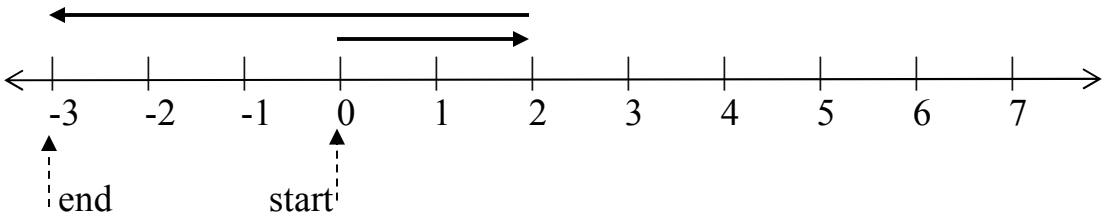


3. Adding a negative and a positive integer.

   Example: -1 + 2 = 1



   Example: 2 – 5 = -3



Which type of problem are the following? Put an x in the correct column.

	Adding two positive integers	Adding two negative integers	Adding a negative and a positive integer
1. 5 + 3	x		
2. -8 + (-2)			
3. -3 + 4			
4. -8 + 2			
5. 6 - -3			
6. (-3) + (-7)			
7. 4 + +3			
8. 6 – 2			
9. 9 + -3			
10. -3 – -4			
11. 6 – 10			
12. -11 + (6)			

Fill in the blanks.

1. When adding ***two positive integers*** you _____ the numbers, and your answer is _____.
2. When adding ***two negative integers*** you ____ the numbers, and your answer is _____.
3. When adding ***a negative and a positive integer*** you _____ the numbers, and your answer has the **sign of the _____ number**.

Make up three problems of each type and solve.

Adding two positive integers.

1.

2.

3.

Adding two negative integers.

1.

2.

3.

Adding a negative and a positive integer.

1.

2.

3.

Use the number lines in Appendix A to solve the following. <u>Be sure to use the number lines</u> even if you already know the answer.

1. -6 + -1 =
2. 10 + 2 =
3. 6 - (+2) =
4. (+1) + (-8) =
5. -5 – 1 =
6. 7 - (5) =
7. +8 + 2 =
8. 7 + (-6) =
9. 1 – 2 =
10. -4 + (- 9) =

Fill in the blanks.

1. When adding ***two positive integers*** you _____ the numbers, and your answer is _____.
2. When adding ***two negative integers*** you ____ the numbers, and your answer is _____.
3. When adding ***a negative and a positive integer*** you _____ the numbers, and your answer has the _____ _____.

Complete the table to solve the problems.

	Do you add or subtract the numbers?	Result of the adding or subtracting.	What is the sign of your answer?	Answer.
1. 8 + 3 =	add	5	+	+5
2. -6 + 2 =	subtract	4	–	–4
3. -2 – 6 =				
4. 2 – 6 =				
5. 7 - -4 =				
6. (-9) + 4 =				
7. (-6) + (-2) =				
8. 7 – 3 =				
9. -3 – 9 =				
10. 9 + (-3) =				
11. 1 + (+4) =				
12. -6 + 9 =				

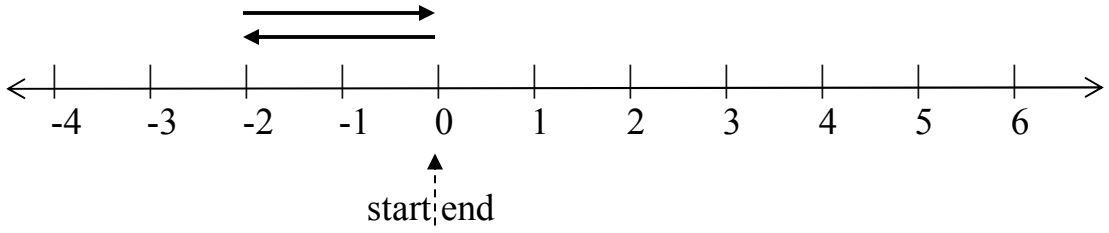
Study the following.

Answers of zero.

A negative and a positive of the same number added together, gives an answer of zero.

Examples: -2 + 2 = 0
3 + (-3) = 0
-4 – (-4) = 0
6 – 6 = 0

-2 + 2 = 0



Solve. Some have an answer of zero and some do not.

1. 5 – 5 =

2. -4 + 4 =

3. -7 + -7 =

4. 3 + (-3) =

5. -3 - -3 =

6. 8 + -8 =

7. -3 -3 =

8. -6 + 6 =

Summary. Solve the following.

Adding two positive integers.

1. $2 + 3 = 5$

2. $+4 + 6 = 10$

3. $1 + +3 = 4$

4. $3 + 6 =$

5. $(+2) + 8 =$

6. $5 + 1 =$

7. $(+2) + (+4) =$

Adding two negative integers.

8. $-1 + -3 = -4$

9. $-5 + -2 = -7$

10. $(-2) + (-4) = -6$

11. $-6 + (-1) =$

12. $-9 + -1 =$

13. $(-5) + -3 =$

14. $(-2) + (-3) =$

Adding two negative integers can also be written as a subtraction problem.

15. $-1 – 3 = -4$

16. $-5 – 2 = -7$

17. $(-2) – 4 = -6$

18. -4 – 3 =

19. (-6) – 1 =

20. -8 – 2 =

21. -3 – 6 =

When you have two negative signs right next to each other, change them to one plus sign before doing anything else.

22. 10 – (-4) = 10 + 4 = 14

23. 7 – -5 = 7 + 5 = 12

24. (2) – -4 = (2) + 4 = 6

25. 1 – -3 =

26. 5 –(-1) =

27. 8 – -2 =

28. 5 – (-3) =

Regular subtraction of a smaller from a larger.

29. 7 – 2 = 5

30. (8) – (1) = 7

31. 3 – 1 = 2

32. +4 – 2 =

33. (7) – +4 =

34. 8 – 1 =

35. (+5) – (+2) =

Regular subtraction written as adding a negative.

36. $5 + (-4) =$

37. $8 + (-2) =$

38. $3 + -1 =$

39. $+7 + -3 =$

40. $(+10) + (-8) =$

41. $11 + -4 =$

42. $6 + (-1) =$

Solving when you have one negative and one positive integer.
(Subtract the two numbers, and then pick the sign of the larger number.)

43. $3 – 6 = -3$

44. $2 – 10 = -8$

45. $-2 + 6 = +4$

46. $4 – 7 =$

47. $3 + (– 9) =$

48. $-3 + 9 =$

49. $(-4) + 5 =$

50. $(-10) + 1 =$

51. $-8 + 6 =$

52. $4 + -10 =$

53. $2 + (-8) =$

54. (12) – (4) =

55. +7 -1 =

56. -6 + 5 =

57. 8 – 2 =

58. (+3) + (-2) =

59. +1 + -6 =

60. 5 + -1 =

61. (12) + (-2) =

62. 3 – 10 =

63. -2 + 7 =

More problems with two negative signs together.

64. -1 - -7 = -1 + 7 = +6

65. -6 - -2 = -6 + 2 = -4

66. -2 – (-4) = -2 + 4 = +2

67. -3 – -5 =

68. -4 – (-1) =

69. (-7) – (-3) =

70. -2 – -10 =

Answers of zero. Some answers are zero and some are not zero.

71. $-7 + 7 = 0$

72. $4 - 4 = 0$

73. $-3 + -3 =$

74. $8 - 8 =$

75. $10 + (-10) =$

76. $-7 + (-7) =$

77. $-5 - (- 5) =$

78. $-1 - 1 =$

79. $+9 - +9 =$

80. $-2 + 2$

Write down the three types of addition of integers, the procedure for each, and 5 examples of each with answers.

1. type _____

   procedure:

   five examples:

2. type _____

   procedure:

   five examples:

3. type _____

   procedure:

   five examples:

Review

1. $4 + 6 =$
2. $+2 + 3 =$
3. $-5 + -6 =$
4. $-2 + (-7) =$
5. $-4 – 5 =$
6. $-2 – 1 =$
7. $4 – -1 =$
8. $5 – (-2) =$
9. $6 – 3 =$
10. $9 – 4 =$
11. $6 + -2 =$
12. $4 + -1 =$
13. $-2 + 6 =$
14. $2 – 1 =$
15. $-1 + 4 =$
16. $(-8) + 7 =$
17. $-6 + (+4) =$
18. $10 – 3 =$
19. $8 – 9 =$

20. $2 - 5 =$

21. $-4 - -6 =$

22. $-3 - -1 =$

23. $(3) - (3) =$

24. $-5 - -5 =$

25. $-2 + -2 =$

26. $-9 + 9 =$

Mixed Review

1. -4 + 3 =	13. -10 + 7 =	25. -5 + 1 =
2. 8 – 2 =	14. +9 -3 =	26. 5 – (3) =
3. -3 – 6 =	15. (-4) – 1 =	27. (-5) – 3 =
4. 5 – -3 =	16. 6 - - 2 =	28. 8 - -3 =
5. (-6) + 6 =	17. -9 + (9) =	29. -1 + 1 =
6. 5 + 5 =	18. 6 + 6 =	30. (+3) + (3) =
7. -2 + (7) =	19. (-1) + 3 =	31. -2 + 7 =
8. -5 – -3 =	20. -10 - -4 =	32. -9 - -2 =
9. 10 – 10 =	21. 12 – 12 =	33. 3 – 3 =
10. (-3) + (-7) =	22. -1 + -3 =	34. -1 + (-4) =
11. 4 – 6 =	23. (3) – (4) =	35. 8 – 9 =
12. 8 + (-1) =	24. 9 + (-3) =	36. 9 + (-2) =

Study the following.

When solving integer problems with large numbers, you need to know the procedures because using a number line is not practical.

Review of procedures.

When adding ***two positive integers*** you **add** the numbers,
and your answer is **positive**.

When adding ***two negative integers*** you **add** the numbers,
and your answer is **negative**.

When adding ***a negative and a positive integer*** you
subtract the numbers(find the difference),
and your answer has the **sign of the larger number**.

Examples: -155 + 43 =

This is adding a negative and a positive integer so we subtract the numbers.

$$\begin{array}{r} 155 \\ \underline{-43} \\ 112 \end{array}$$

Then take the sign of the larger number. 155 is larger and it is negative (-)
The answer is – 112.

-77 – 68 =

This is adding two negative integers, so we add the numbers.

$$\begin{array}{r} 77 \\ \underline{+\ 68} \\ 145 \end{array}$$

Then the sign is a negative.
The answer is -145.

Solve.

1. 26 + (-13) =	10. -183 + 64 =
2. 68 – 129 =	11. -230 + 120 =
3. (-48) + (-79) =	12. 356 – (211) =
4. 300 – 480 =	13. (-38) – 12 =
5. -304 - -173 =	14. 54 - -32 =
6. -31 + (71) =	15. (+63) + (+63) =
7. 88 - -37 =	16. -96 + 428 =
8. -320 – 230 =	17. -55 - -25 =
9. 650 – 321 =	18. -62 + (-25) =