New Jersey Center for Teaching and Learning

Progressive Mathematics Initiative

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5th Grade

Algebraic Concepts

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Expressions with Parenthesis, Brackets & Braces

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Things change.

To describe things that change or vary, mathematicians invented Algebra.

Algebra makes it easier to say exactly how two changing things (like dollars earned and hours worked) are related.

Algebra help us to tie together many mathematical ideas.

Important Vocabulary:

An expression is like a phrase and names a number.

An equation is a number sentence that describe a relationship between two expressions.

H x 6 is an example of an algebraic expression. An algebraic expression uses operation symbols (+,-,x,÷) to combine variables and numbers.

A letter that stands for a number is called a variable.

Some common variables are:
l = length, w = width, h = height, and x or y.

Use parentheses ( ) or brackets to help to group calculations to be sure that some calculations are done in a special order.

When you use parentheses ( ) you say DO THIS FIRST.

EXAMPLE: Each of 5 friends got a full box of snacks and an extra 6 snacks. Write an equation to show how many snacks are in all those boxes and all those extra snacks.

Even if you don't know how many snacks are in a box, you can write an expression to show how many.

5 x snacks + 6

The order of operations would tell you to multiply 5 by snacks then add 6. But every friend has a sum of snacks (snacks + 6) and you want to multiply the sum by 5.

Use parentheses to group the sum: 5 x (snacks + 6).
So, if snacks = 4, you compute like this:

5 x (4 + 6)

5 x 10 = 50

Solving 17 - 4 x 3 = ?

You may not know what operation to do first. You can use parentheses in a number sentence to make the meaning clear. When there are parentheses( ) in the expression, the operations inside the parentheses( ) are always done first.

Let's solve (17 - 4) x 3

The parentheses tell you to subtract 17 - 4 first.
(17 - 4) x 3
Then multiply by 3. 13 x 3
The answer is 39. 39

OR

Let's solve 17 - (4 x 3)

The parentheses tell you to multiply 4 x 3 first.
17 - (4 x 3)
Then subtract. 17 - 12
The answer is 5. 5

1 Evaluate (9 - 6) + 3

2 Evaluate 14 - (5 x 2)

3 **Evaluate (8 x 9) - (6 x 7)**

4 **Evaluate 2 x (3 + 4) x 3**

5 **Evaluate 24 ÷ (2 + 2)**

Order of Operations

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In an expression with more than one operation, use the rules called Order of Operations.

1. **Perform all operations within the parentheses( ) first.**
2. **Do all multiplication and division in order from left to right.**
3. **Do all addition and subtraction in order from left to right.**

Name the operation that should be done first.

6 x 3 + 4 _____

3 + 4 x 6 _____

5 - 3 + 6 _____

(9 - 6) + 3 _____

6 **Do you multiply or subtract first? (6 - 3) x 8**

- ○ **A multiply**
- ○ **B subtract**

7 Do you multiply or add first? 6 x (3 + 2)

A multiply

B add

8 Do you add or multiply first? 6 + 3 x 2 + 7

A add

B multiply

9 Do you divide or add first? 12 ÷ 3 + 12 ÷ 4

A add

B divide

10 Do you add or multilpy first? (10 + 6 x 6) - 4 x 10

A add

B multiply

Some students find it's easier to remember the Order of Operations by memorizing this sentence:

Please Excuse My Dear Aunt Sally

Parentheses Exponents Multiply left to right Divide Add left to right Subtract

Evaluate the expression using the Order of Operations

4 + 3 x 7

Step 1 Multiply 3 x 7

Step 2 Rewrite the expression
4 + 21

Step 3 Add 4 + 21

So, 4 + 3 x 7 = 25

Evaluate the expression

4 x (11 - 5) + 4

Step 1 Do the operation in the parentheses first-subtract
11 - 5
Step 2 Rewrite the expression
4 x 6 + 4
Step 3 Multiply 4 x 6
Rewrite the expression
24 + 4
Step 4 Add 24 + 4

So, 4 x (11 - 5) + 4 = 28

Evaluate the expression

(10 + 6 x 6) - 4 x 10

Step 1 Start with computations inside the parentheses using the Order of Operations-multiply first, then add
10 + 6 x 6
10 + 36
46
Step 2 Rewrite the expression with parentheses evaluated
46 - 4 x 10
Step 3 Multiply 4 x 10
Step 4 Rewrite the expression
46 - 40
Step 5 Subtract

So, (10 + 6 x 6) - 4 x 10 = 6

11 What is the value of this expression? 5 + 3 x (7 - 1)
Remember to do inside the parentheses( ) first.

A 23
B 25
C 48
D 64

12 What is the value of this expression?
(8 + 4) ÷ 3 x 6

A 6
B 9
C 24

13 Use the Order of Operations,
Write each step and evaluate the expression

5 x (12 - 5) + 7

14 Evaluate (8 x 2 - 2) - 7

15 Evaluate (14 - 5) + (10 ÷ 2)

16 Evaluate 50 ÷ 10 + 15

17 Which expression equals 72?

- A 36 ÷ 4 - 3 x 2
- B (36 ÷ 4 - 3) x 2
- C 36 ÷ (4 - 3 x 2)
- D 36 ÷ (4 - 3) x 2

Grouping Symbols

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Besides parentheses ( ),

brackets [ ] and

braces { }

are other kinds of grouping symbols used in expressions. To evaluate an expression with different grouping symbols, perform the operation in the innermost set of grouping symbols first. Then evaluate the expression from the inside out.

Evaluate the expression

2 x [(9 x 4) - (17 - 6)]

Step 1 Do operations in the parentheses ( ) first.
multiply, subtract and rewrite
2 x [36 - 11]

Step 2 Next do operations in the brackets [ ].
subtract and rewrite
2 x 25

Step 3 Multiply 2 x 25 = 50

So, 2 x [(9 x 4) - (17 - 6)] = 50

Evaluate the expression

3 x [(9 + 4) - (2 x 6)]

Step 1 Do the operations in the parentheses ( ) first.
add, multiply and rewrite
3 x [13 - 12]

Step 2 Next do operation in the brackets [ ].
subtract and rewrite
3 x 1

Step 3 Then multiply 3 x 1 = 3

So, 3 x [(9 + 4) - (2 x 6)] = 3

Let's evaluate an expression together.
Remember the Order of Operations and
solve parentheses ( ) first, then brackets [ ].

5 x [(11 -3) - (13 - 9)]

5 x [8 - 4]

5 x 4

20

Your turn...Evaluate the expression. Write each step.

8 x [(7 + 4) x 2]

Step 1

Step 2

Step 3

18 Evaluate an expression from the inside out.

- True
- False

19 In the following expression, what operation would you do first?

4 x [(15 - 6) x (7 - 3)]

- A multiiply
- B add
- C subtract

20 Evaluate the expression. Rewrite each step.

40 - [(8 x 7) - (5 x 6)]

21 Evaluate the expression.

60 ÷ [(20 - 6) + (14 - 8)]

Follow the same rules to solve expressions with braces { }. Perform the operation in the innermost set of grouping symbols first. The evaluate the expression from inside out.

Evaluate the expression 2 x {5 + [(10 - 2)] + (4 - 1)]}

Step 1 Do operations in parentheses ( ) first.
subtract and rewrite
2 x {5 + [8 + 3]}

Step 2 Next do operations in brackets [ ]
add and rewrite
2 x {5 + 11}

Step 3 Then solve operations in braces { } add and rewrite

Step 4 Multiply 2 x 16 = 32

So, 2 x {5 + [(10 - 2)] + (4 - 1)]} = 32

Let's evaluate an expression together.
Remember the Order of Operations and to solve parentheses ( ), braces[ ] and brackets{ } from the inside out.

7 + {32 + [(7 x 2) - (2 x 5)]}

7 + {32 + [14 - 10]}

7 + {32 + 4}

7 + 36

43

22 Evaluate the expression.

3 x {30 - [(9 x 2) - (3 x 4)]}

23 Evaluate the expression.

10 + {36 ÷ [(14 -5) - (10 - 7)]}

24 Which expressions equals 8?

A {5+[6-(3 x 2)] -1}

B {[5 + (6 - 3) x 2] - 1}

C {5+ 6 - [3 x (2 - 1)]}

Writing Simple Expressions & Interpreting Numerical Expressions

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Word problems use expressions that you can write with symbols. An algebraic expression has at least one variable. A variable is a letter that represents an unknown number. Any letter can be used for a variable. Writing algebraic expressions for words helps to solve word problems.

These are a few common words that are used for operations.

add (+)	subtract (-)	multiply (x)	divide (÷)
sum	difference	product	quotient
increased by	minus	times	divided by
plus	less	doubled	per
more than	decreased by	tripled	

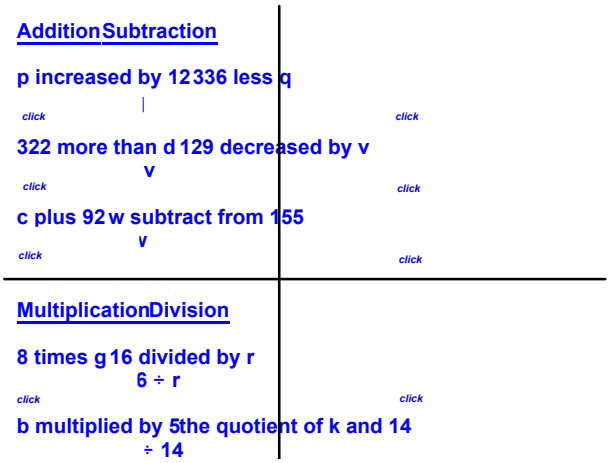
Examples:

17 more than x More than means add.
x + 17 17 more than x means add 17 to x.

four times the Times means multiply.
sum of 7 and n Sum means add.
4(7 + n) The words mean multiply 4 by (7 + n)

You may write a number such as 5 times a variable, n, as:
5 x n or as 5n.
The number next to a variable always shows multiplication.

Practice writing a simple algebraic expression for these words.



25 Which phrase is the correct algebraic expression?
4 more than x

A x + 4
B 4 + x

26 Which phrase is the correct algebraic expression?
the sum of x and 9

A x + 9
B 9 + x

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27 Which phrase is the correct algebraic expression?
c decreased by 7

- A c - 7
- B 7 - c

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28 Which phrase is the correct algebraic expression?
13 less than p

- A 13 - p
- B p - 13

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29 Which phrase(s) is the correct algebraic expression?
product of a and 4

- A 4 + a
- B 4a
- C 4 x a

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30 Which phrase is the correct algebraic expression?
b divided by 3

- A 3 ÷ b
- B b ÷ 3

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31 Which phrase is the correct algebraic expression?
three times the sum of 8 and y

- A 8 x (3 + y)
- B 3 x (8 + y)

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32 Which is the correct algebraic expression?
12 divided by the sum of h and 2

- A 12÷(h + 2)
- B (h + 2)÷12

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Let's practice writing phrases for these algebraic expressions.

Remember key words or phrases help decide which operation(s) to use when making your translations.

Operation	Key Words/Phrases
Add (+)	sum, more than, increased by
Subtract (-)	difference, less than, decreased by
Multiply (x)	product, times, twice, doubled, of
Divide (÷)	quotient, half, per

Examples:

5 + p u + 160 4f or x f

5 and p more160 increased by u4 times f

k - 199 270 + y j ÷

k reduced by 199 y added to 270j divided by six

2e + 9 (g 3) - 10 ÷

double e plus 9the quotient of g divided by three minus ten

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33 Is this phrase,16 less than p, the same as p - 16?

- True
- False

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34 Is this phrase, w subtract from 233, the same as w - 233?

- True
- False

Slide 64 / 124

35 Is the product of a number (n) and 12, the same as n x 12?

- Yes
- No

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36 Which phrase is correct for the expression m 7?

- A m decreased by seven
- B the quotient of m and seven
- C the quotient of seven and m

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37 Which phrase(s) are correct for the expression 3y + 9?

- A three times y plus nine
- B three times 9 plus y
- C triple y added to nine

Saying it with Symbols

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We can now translate expressions by writing an equation with numbers and a variable.

The product of 8 and n is 56. This can be written as the following:
8 x n = 56 or 8n = 56

8 times v is 168. This can be written as the following:
8 x v = 168 or 8v = 168

The second way is *easier* to understand because the multiplication symbol (x) does not get confused with the variable letter of x.

Practice writing the equations, not solving them!

60 divided by k is 15. This can be written as the following:
$60 \div k = 15$ or $\frac{60}{k} = 15$

Remember, the phrase "divided by" means division or fraction.
Also, the order in division makes a difference.
The quotient of a and b means $a \div b$ ($\frac{a}{b}$) and not $b \div a$.

b divided by 5 is 14. This can be written as the following:
$b \div 5 = 14$ or $\frac{b}{5} = 14$

Practice writing the equations, not solving them!

38 Is the sum of 6 and 5 is 11, the same as 6 + 5 = 11?

- True
- False

39 Is eight times a number is 16, the same as 8n = 16

- True
- False

40 Is six divided by 3 equals a number, the same as 3÷6 = n?

- True
- False

A number sentence is an equation that involves numbers or variables. Often, in "real world" problems a contextual sentence is given and you must translate it into a sentence. Let's study four similar examples.

Example 1

Patty bought just enough nuts to put five on each brownie she made. If n is the number of nuts she bought, how many brownies did she make?

It can be helpful for you to select a number for the variable as an example. For instance, if Patty bought 20 nuts and place 5 nuts on each brownie, then she made 20÷5 = 4 brownies.

Thus, the correct number sentence would be

number of brownies = n ÷ 5

Example 2

Pedro bought five of each kind of cookies that a bakery made. If k is the number of kinds of cookies the bakery had, how many cookies did Pedro buy?

number of cookies = k x 5

Example 3

Shandra sold five fewer boxes of Girl Scout cookies than Lisa. If L is the number of boxes Lisa sold, how many boxes of cookies did Shandra sell?

Shandra = L - 5

Example 4

Nick brought 5 new packs of baseball cards today. If P is the number of packs he had yesterday, how many does he have now?

Today = P + 5

41 For a recycling project, 4 students each collected the same amount of plastic bottles. They collected 32 in all. Which equation, when solved, will tell how many bottles each student collected?

- A 32 x 4 = b
- B 4 - 32 = b
- C 4 x b = 32

42 David has 46 sweaters in his closet. He has some sweaters in his dresser as well. David has 64 sweaters in all. Which equation, when solved, will show how many sweaters are in David's dresser?

- A 46 + s = 64
- B 64 + 46 = s
- C 64 + s = 46

43 A teacher opened a box of raisins and divided them evenly among 16 students. Each student got 6 raisins. Which equation, when solved, will tell how many raisins were in each box?

- A r - 16 = 6
- B 6÷r = 16
- C r÷16 = 6

44 Dana took some almonds from a bowl. She ate ten of them and had 18 almonds left. Which equation, when solved, will tell how many almonds Dana took from the bowl?

- A a - 10 = 18
- B a÷10 = 18
- C a + 10 = 18

Function Tables

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A relation is a set of ordered pairs.

The members of a set can be:

- pairs of things(like socks)
- people(like boys and girls)
- people and things(like students and the types of books they read)
- numbers(like 5 and 10).

They are many ways to show the items in two sets are related.

- a word description ~ an algebraic rule or equation
- a table ~ a graph
- a list of ordered pairs

A function shows the relationship between an *Input* amount and an *Output* amount.

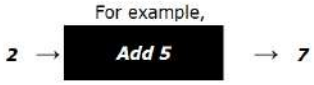
Let's practice using tables, equations and graphs to describe a function or relation.

A function table shows you the relationship between pairs of numbers. The relationship is defined by a rule, and this rule applies to all the pairs of numbers on the table.

You can think of the rule as a black box or machine. Usually, the Input is labeled (x) and the Output is labeled (y).

1. input goes in
2. the rule is applied to the input
3. you get the output

For example,



The function table can be set up vertically or horizontally to show the relation. x = first number (input) y = second number (output). If the rule is add 5, here are the tables:

input(x)	output(y)
0	5
1	6
2	7
3	8

input(x)	0	1	2	3
output(y)	5	6	7	8

The variables *x* and *y* are usually used for an unknown value, but other letters can be used.

Examples: ***m*** **= miles**
c **= cost**
h **= hours**
l **= length**

Let's apply a rule to the function table.

Use the given rule to fill in the missing values.

Subtract 7	
Input (*x*)	Output (*y*)
10	
17	
13	
9	

The rule is "**Subtract 7**".
This means that you need to subtract 7 from ***x*** (the input) to get ***y*** (the output).

10 → 10 - 7 → 3
17 → 17 - 7 → 10
13 → 13 - 7 → 6
9 → 9 - 7 → 2

So the answer is

Subtract 7	
Input (*x*)	Output (*y*)
10	3
17	10
13	6
9	2

Let's apply a different rule to the function table.

Use the given rule to fill in the missing values.

y = *x* ÷ 6	
Input (*x*)	Output (*y*)
24	
48	
42	
30	

To apply the rule ($y = x \div 6$), substitute the input values for ***x*** in the rule.

24 → 24 ÷ 6 → 4
48 → 48 ÷ 6 → 8
42 → 42 ÷ 6 → 7
30 → 30 ÷ 6 → 5

So the answer is

y = *x* ÷ 6	
Input (*x*)	Output (*y*)
24	4
48	8
42	7
30	5

45 Rule: Add 4
Is the missing value 14?

- ◯ True
- ◯ False

input(x)	output(y)
6	10
7	11
8	12
10	
12	16

46 Rule: Multiply 3
Is the missing value 12?

- ◯ True
- ◯ False

input(x)	output(y)
2	6
3	9
6	18
8	24

47 Rule: Add 9
What is the missing value?

input(x)	
output(y)	

48 **Rule: Divide by 2**
What is the missing value?

input(x) output(y)

49 **Rule: Subtract 8**
What is the missing value the arrow is pointing to?

input(x)

output(y)

50 **Rule: Subtract 8**
What is the missing value the arrow is pointing to?

input(x)

output(y)

Let's find the rule for the function table. Add, subtract, multiply or divide the Input(x) to get the Output(y).

Find the rule that applies to the table.

Rule: $y = x$	
Input (x)	**Output (y)**
8	1
24	3
40	5
64	8
72	9

Look for a pattern with the input and output pairs.
Notice how every output value is less than the input value.
This means that the rule is either subtraction or division.

Let's study the pattern between the input and output values.

Look at the difference between the numbers.

The difference between 8 and 1 is 7.
The difference between 24 and 3 is 21.
The difference between 40 and 5 is 35.
The difference between 64 and 8 is 56.
The difference between 72 and 9 is 63.

→ The differences between the input and output pairs are different.
You know that the rule is either subtraction or division.
Since the differences are all different, the rule is division.

How do you go from 8 → 1? $8 \div 8 = 1$
How do you go from 24 → 3? $24 \div 8 = 3$
So the rule is division by 8.

The rule is $y = x \div 8$ or divided by 8.

Let's practice finding the rule or function on the tables.
Remember to look at the given Input-Output pairs.

Input (x)	Output(y)
2	9
3	10
5	12
6	13

Each Output is greater than the Input.
Try a rule with addition or multiplication.

2 → 9
3 → 10
5 → 12
6 → 13

The rule is Add 7, or $y = x + 7$.

Input(x)	Output(y)
15	3
20	4
25	5
40	8

Each Output is less than the Input.
Try a rule with subtraction or division.

15 → 3
20 → 4
25 → 5
40 → 8

The rule is Divide by 5, or $y = x \div 5$.

51 **Is the rule or function y = x ÷ 9?**

- Yes
- No

Input(x)	Output(y)
9	1
18	2
27	3
36	4

52 **Is the rule y = x - 6?**

- Yes
- No

input(x)	6	8	10	14
output(y)	0	2	4	8

53 **Is the rule or function y = 2x - 1?**

- True
- False

Input(x)	Output(y)
10	19
8	15
14	27
6	11

54 **What is the rule or function?**

- A Subtract 2
- B Add 3
- C Add 2

Input(x)	Output(y)
5	8
7	10
6	9
8	11

55 **What is the rule or function?**

- A y = x + 2
- B y= 2x
- C y = x ÷ 2

Input(x)	Output(y)
2	0
20	10
14	7
10	5

56 **What is the rule or function?**

- A y = 2x + 2
- B y = 3x + 2
- C y = 2x - 2

Input(x)	Output(y)
1	5
2	8
3	11
4	14

A function table can be used to solve Miguel and Mary's problem with their pens.

Miguel has 7 fewer pens than Mary.

Rule: y = x - 7	
# pens Mary has (x)	# pens Miguel has (y)
9	
10	
16	
17	

move blue boxes

Solution:
"Miguel has 7 fewer pens than Mary." means
Number of pens Miguel has is 7 fewer than the number of pens Mary has
y = - 7 x

So you get , y = x - 7

A function table can be used to solve Sharon's problem with number of miles she will run given any number of hours.

Sharon runs 5 miles per hour.

Rule: y = 5x	
Number of hours (x)	Number of miles (y)
4	
8	
3	
9	

move blue boxes

Solution:
For the number of miles, multiply by the rate(miles per hour).
number of miles = miles per hour x *number of hours*
y = 5 x *x*

So you get, y = 5x

Lori is traveling by a taxi in New York City. Using a function table, she can calculate the cost of her trip. Use the letter m, for the miles traveled and c, for the cost of the taxi ride.

miles traveled, m	1	2	3	4	5	6	7
cost of taxi ride, c	$6	$7	$8	$9	$10	$11	$12

How would you describe the function in words?

_____

What would be the equation to calculate the cost?

_____

Using the equation, how much would if cost to travel 20 miles?

_____

57 Use the function table.
Will 15 people fit in 3 vans?

- ○ Yes
- ○ No

number of people, p	5	10	15	20
number of vans, v	1	2	3	4

58 Use the function table and equation.
How many vans are needed for 35 people?

- ○ A 5 vans
- ○ B 35 vans
- ○ C 7 vans

number of people, p	5	10	15	20
number of vans, v	1	2	3	4

59 If each package contained 2 cookies, what is the number of cookies in the package?

(p) number of packages	(c) number of cookies

60 Use the function table and equation.
How many hours will it take the car to travel 495 miles?

- A 7 hours
- B 9 hours
- C 11 hours
- D 15 hours

time (hr)	1	2	3	4
distance (miles)	55	110	165	220

61 Use the function table and equation.
How much money will you earn in 4 weeks?

Graphing Patterns and Relationships in the Coordinate Plane

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Number patterns, functions tables and equations can be shown in graphs on a coordinate plane.

The graph gives an easy visual way to solve problems and to make further predictions based on the patterns seen in the graph.

Follow the steps to graph the function y = x + 2.

Step 1 Complete the function table.
Replace the *x* in the equation with a number from the *x* column. Then solve for *y*. Do this for each *x* value.

Step 2 Graph each ordered pair (*x*,*y*) on the coordinate grid. Look at the first pair (1,3).
The 1 tells you to go one unit to the right (horizontal) of the origin (0); 3 tells you to move three units up (vertical).

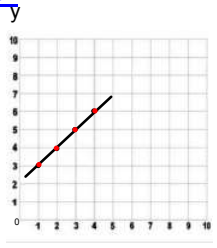
Step 3 Use the same method to graph (2,4), (3,5), (4,6)

Step 4 Connect all the points with a line. You should end up with a straight line that shows the solution for y = x + 2.

Equation y = x + 2

Function TableGraph

x	y
1	3
2	4
3	5
4	6



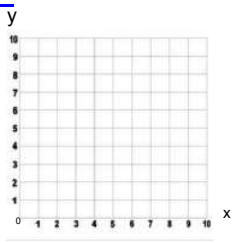
Quadrant I - positive numbers

Equations that result in **straight lines** are called linear equations.
Increasing line: A line that slants upward from left to right.
Decreasing line: A line that slants downward from left to right.
Equations that result in **curved lines** are called nonlinear equations.

Equation: y = x - 1

Function Table **Graph**

x	y
1	0
2	1
3	2
4	3



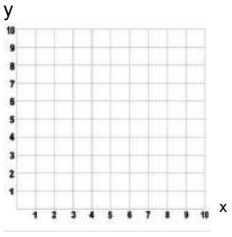
Quadrant I - positive numbers

Solve for y.
Start with x = 1
y = 1 - 1
y = 0
Repeat the above steps to find the value of y when x = 2.
Repeat x = 3 and x = 4.
Graph the order pairs and connect the points with a line.

Equation: y = 2x + 3

Function Table **Graph**

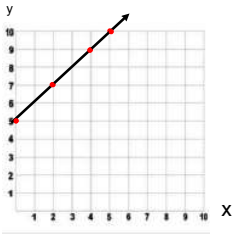
x	y
0	3
1	5
2	7
3	9



Quadrant I - positive numbers

Solve for y.
Start with x = 2
y = 2x + 3
y = (2 x 2) + 3
y = 7
Repeat the above steps to find the value of y when x = 3.
Graph the order pairs and connect the points with a line.

62 Which of the following points is on the line?

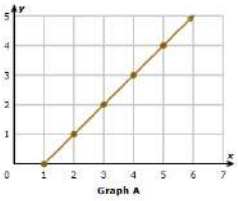


- A (1, 5)
- B (4, 10)
- C (2, 7)
- D (8, 3)

63 Which graph shows the correct function?

$y = x - 2$

x	y
2	0
3	1
4	2
5	3

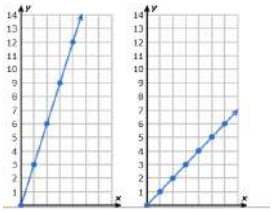


A Graph A B Graph B

64 Which graph does not show the correct function?

$y = 3x$

x	y
1	3
2	6
3	9
4	12

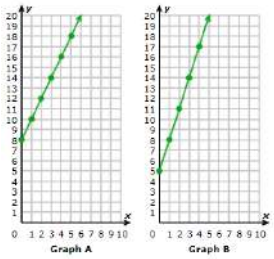


A Graph A B Graph B

65 Which graph shows the correct function?

$y = 2x + 8$

x	y
3	14
4	16
5	18
6	20



A Graph A B Graph B

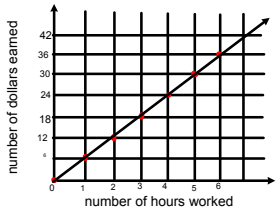
Graphing Relations can be used in "real" world problems.

The clerk at the video store earns $6.00 per hour. Here is how you would graph the relation between hours worked and amount earned, up to six hours.

First, use a table to show this one-to-one relation.

Hours Worked (x)	0	1	2	3	4	5	6
Dollars Earned (y)	0	$6	$12	$18	$24	$30	$36

Second, graph the ordered pairs:
(0, 0), (1, 6), (2, 12), (3, 18), (4, 24), (5, 30), (6, 36).



Using the equation from the table or graph, **y = 6x**, you can calculate how much you would earn given any amount of hours. If you worked 12 hours, how much would you earn?

If you worked 30 hours, how much would you earn?

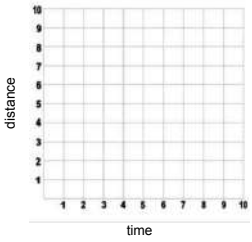
If you worked 40 hours, how much would you earn?

Blaise walks home from school at the rate of 3 kilometers per hour. Complete the function table that shows the relationship between d, the distance he walks, and t, the time it takes him to walk this distance. Graph the ordered pairs and connect with a line.

Equation: d = 3t **or** y = 3x

x y

time (t)	distance (d)	ordered pairs
0	0	(0, 0)
1	3	(1, 3)
2	6	(2, 6)
3	9	(3, 9)



Using the equation from the table or graph, d = 3t, you can calculate how much distance traveled given any amount of time. If you walked 5 hours, how much distance did you travel?
If you walked 8 hours, how much distance did you travel?

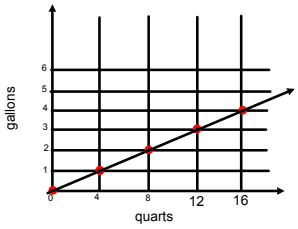
66 Which function table does the graph best represent?

A Table A

number of quarts (q)	number of gallons (g)
0	0
1	2
2	4
3	6

B Table B

number of quarts (q)	number of gallons (g)
0	0
4	1
8	2
12	3



67 Which best describes a graph that shows the relationship between the cost of heating a home and the outside temperature?

A horizontal line
B an increasing straight line
C a decreasing straight line
D a vertical line