

Cornell Notes
Evaluation
Combine Like
Terms

WARM UP

Write the definition for each
VOCABULARY term

algebraic expression
numerical expression
coefficient
variable
evaluate
constant
solution
term

Like Terms
distribute

Greatest Common Factor
(GCF)

Least Common Multiple
(LCM)

Evaluating Expressions

Lesson Essential Question

How do we evaluate an expression for a given value?

How do we evaluate an algebraic expression?

In algebra, to evaluate means to substitute a number for the variable.

EXAMPLE 1:

Evaluate the expression $n + 7$, when $n = 3$

SOLUTION: (wherever I see the variable n , replace it with 3)

$$\begin{aligned}n + 7 &= (3) + 7 \\ &= 10\end{aligned}$$

EXAMPLE 2:

Evaluate the expression $3x$, when $x = 3$

SOLUTION: (wherever I see the variable x , replace it with 3)

$$\begin{aligned}3x &= 3(3) \\ &= 9\end{aligned}$$

EXAMPLE 3:

Evaluate the expression $3x + 7$, when $x = 3$

SOLUTION: (wherever I see the variable x , replace it with 3)

$$\begin{aligned}3x + 7 &= 3(3) + 7 \\ &= 9 + 7 = 16\end{aligned}$$

Why do we use parenthesis?

Parenthesis help us keep track of the number we've replaced the variable with.

Cornell Notes
Evaluating
Expressions

Please Answer the Following in Complete Sentences. (HINT: USE YOUR NOTES)

1. How do we evaluate an algebraic expression?

2. Why do we use parenthesis?

*Evaluating
Expressions*

Lesson Essential Question
How do we evaluate an expression for a given value?

***PRACTICE
we try together***

EVALUATE EACH EXPRESSION

1) $4t$, when $t = 6$ 2) $x - 8$, when $x = 9$ 3) $63 \div z$, $z = 9$

4) $3r + 5$, $r = 6$ 5) $2 - 7w$, $w = -4$ 6) $2e + 5e$, $e = -4$

Don't forget our calculations with rational numbers.

$$m + 2.8, \quad m = -4.3$$

substitute
simplify

$$r^2 - 3, \quad r = 5$$

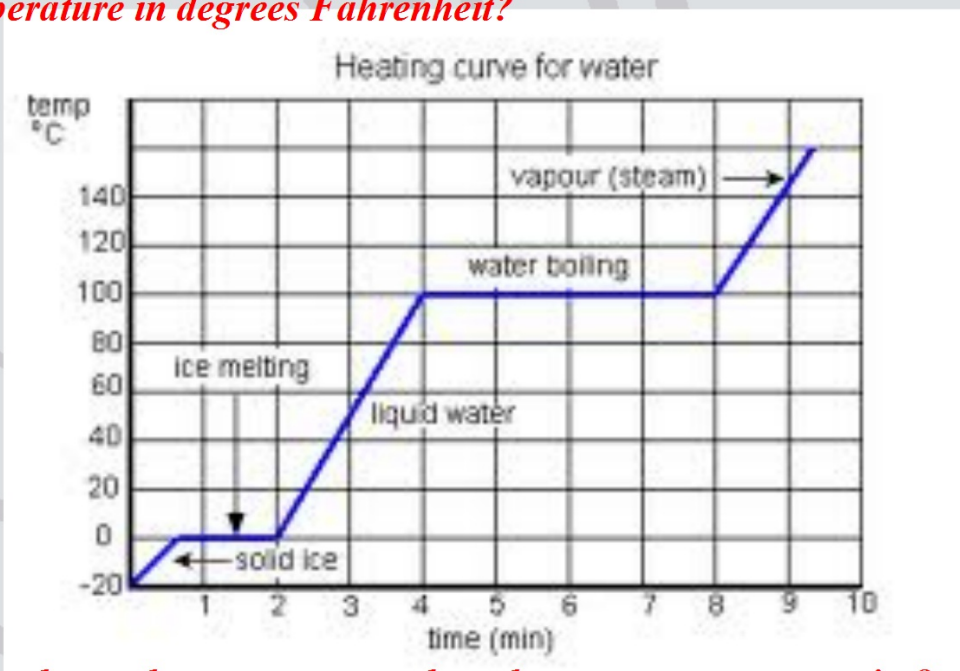
substitute
simplify

$$(-s)(t), \quad s = \frac{1}{3} \quad t = 1 \frac{4}{5}$$

substitute
simplify

WORD APPLICATION

1) The expression $1.8c + 32$ can be used to convert a temperature in degrees Celsius, C, to degrees Fahrenheit, F. If the temperature is 40°C , what is the temperature in degrees Fahrenheit?



2) At about what temperature does the water start to vaporize?

3) What is the vapor point in degrees Fahrenheit?

TO live A
creative
LIFE,
we must LOSE
our FEAR of
BEING wrong.

*How do you express yourself
when you....*

are HAPPY?

have FOUND MONEY?

**have purchased a new pair of
Jordans?**

get a BAD GRADE ON A TEST?

are MAD?

**DO WE ALL EXPRESS OURSELVES THE
SAME WAY? Why or Why not??**

On a separate sheet

What do I KNOW about...

What do I WANT to know about...

I have LEARNED...

Expressions

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We will come back to this at the end of the unit

Equations

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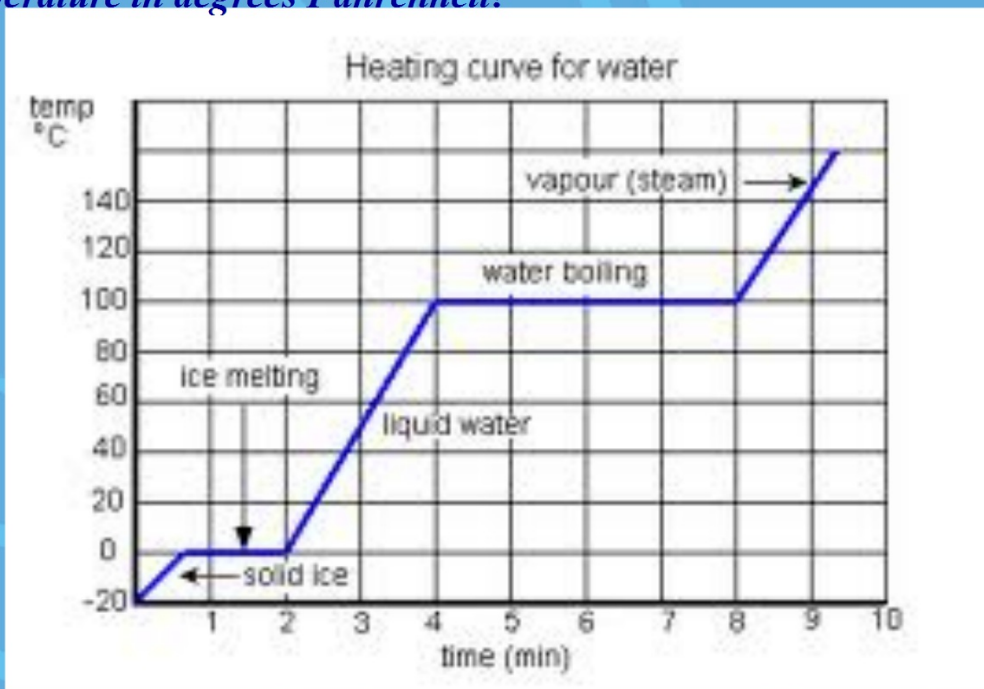
Variables

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EXIT TICKET

1) The expression $1.8c + 32$ can be used to convert a temperature in degrees Celsius, C, to degrees Fahrenheit, F. If the temperature is 30°C , what is the temperature in degrees Fahrenheit?



- 2) At what temperature does the water start to boil?
3) What is the boiling point in degrees Fahrenheit?

AGENDA

Turn-and-Talk

K-W-L Chart

Cornell Notes:

Intro. to Expressions

1. $-5 + x$, for $x = 4$

2. $5y - 1$, for $y = 3$

3. $7z$, for $z = -2$

4. $\frac{-18}{a}$, for $a = -9$

5. The expression $1.8c + 32$ can be used to convert temperature in degrees Celcius c to degrees Fahrenheit. What is the temperature in degrees Fahrenheit, if it is 25°C in Jamaica?

AGENDA

○ Distribution

Warm-Up Evaluate the expression.

1. $5y - 1$, for $y = 3$

2. $p \div 7 + p$, $p = 14$

3. $5a - 3b + 5$
(for $a = 4$ & $b = 3$)

4. $3x^2 + 2y - 50$
(for $x = 5$ & $y = 10$)

5. $\frac{xy+y}{y}$, $x = 7$ & $y = 5$

6. The expression $1.8c + 32$ can be used to convert temperature in degrees Celcius c to degrees Fahrenheit. What is the temperature in degrees Fahrenheit, if it is 25°C in Jamaica?

Introduction to Equations and Expressions

Lesson Essential Question
How do we translate our real life situations into algebra?

What is an algebraic expression?

A math sentence that contains one or more variables and may contain operation symbols.

EXAMPLE: $150 + w$
 $35w + z$

CONSTANT
a quantity that does not change.

COEFFICIENT
a number that is multiplied by the variable.

VARIABLE
a letter or symbol, that can change, and represents a quantity

Two ingredients for an algebraic expression

What is an algebraic equation?

A mathematical statement that two quantities are equal.

EXAMPLE: $15 + s = 27$

SOLUTION
the value of the variable that makes an equation true.

Sum
Greater Than
Increased by
More than
Plus
Add(ed)

Decreased by
Subtracted from
Less than
Fewer/ Farther
Difference

Product
Twice as much as
Triple
Groups of
Multiplied by
Times

Quotient
Divided By
Split Equally
Cut
Fit Into

**Introduction to
Equations and
Expressions**

Lesson Essential Question

**How do we translate our real life situations
into algebra?**

PRACTICE

1) 14 more than b .

2) 15 divided by d .

3) m multiplied by 67

4) the quotient of x and 25.

5) California has 21 more seats in the U.S. Congress than Texas has. If t represents the number of seats Texas has, write an expression for the number of seats California has.

6) Janet is 15 years younger than Isaiah. Using i for Isaiah, write an expression to show Janet's age.

**Write Algebraic Expressions
for These Word Phrases**

Ten more than a number

A number decrease by 5

6 less than a number

A number increased by 8

The sum of a number & 9

4 more than a number



Write Word Phrases for These Algebraic Expressions

$$s + 2$$

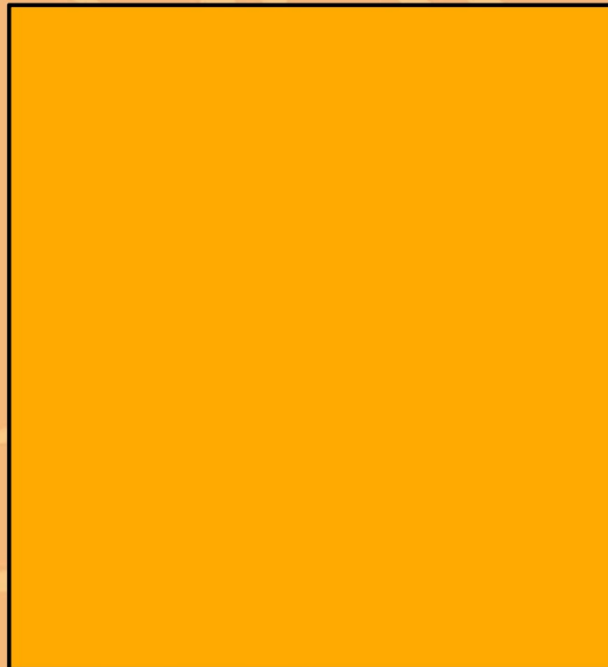
$$k - 1$$

$$x - 31$$

$$b + 7$$

$$n + 6$$

$$z + 9$$



CHOOSE A NUMBER BETWEEN 1 and 10

If you were asked to write an expression for the trick we just performed, what would it be?




Cornell Notes
Combine Like
Terms
Distribution

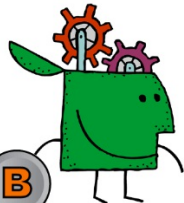
- 1) the product of 15 and x**
- 2) 25 less than k**
- 3) 34 times w**
- 4) 2 times the sum of a number and 4**
- 5) A 5-ft pine tree was planted and grew 2 feet each year. Write an algebraic expression for the height of the tree after t years.**

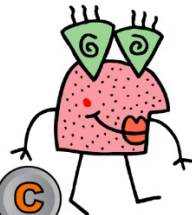
Flashback!

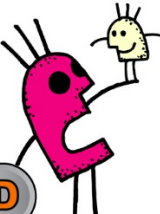
Which two options represent equivalent fractions?

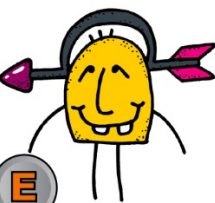
Response category: Enhanced multiple choice


 $\frac{9}{12}$

 $\frac{3}{6}$

 $\frac{1}{6}$

 $\frac{6}{12}$

 $\frac{1}{12}$

 $\frac{4}{12}$

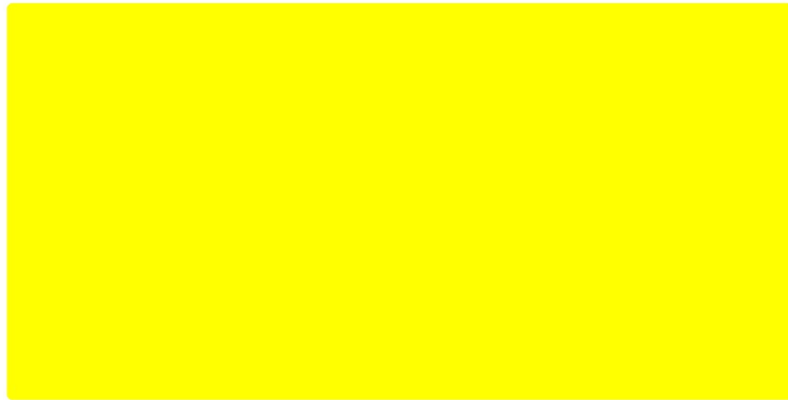
ANSWER

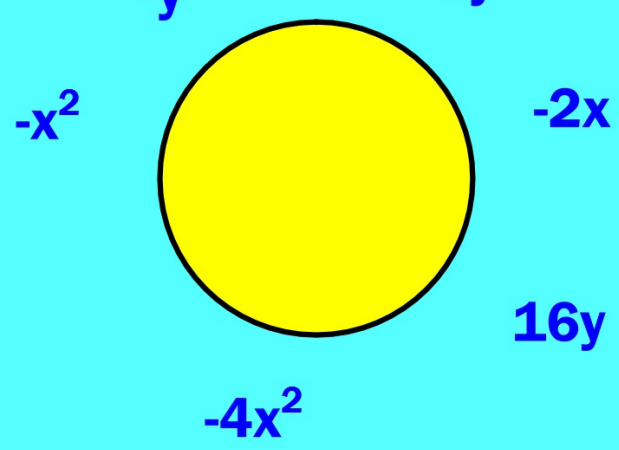
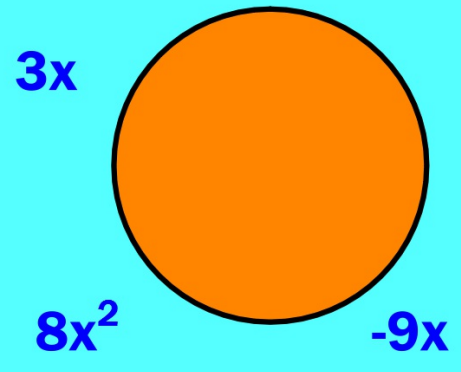
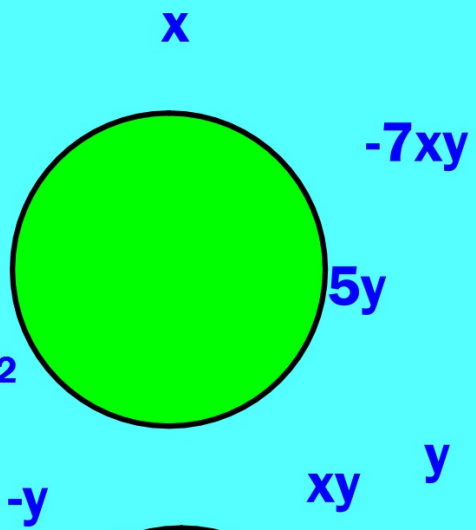
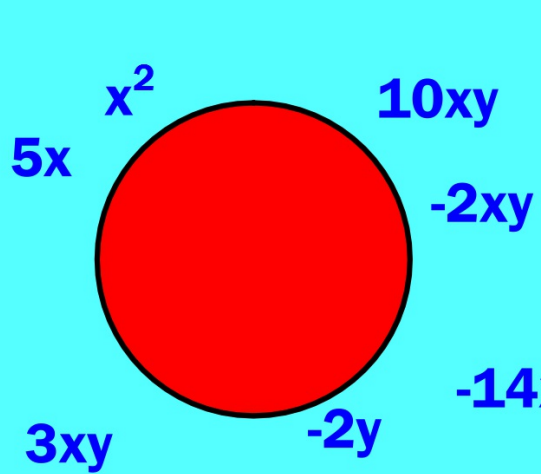
Like Terms

Definition of
like terms

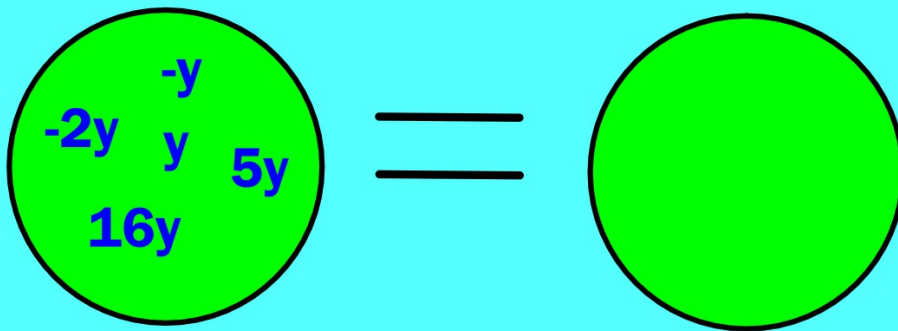
Like Terms are Terms that have the same
variable and the same **degree**
meaning the same letter with the
same exponent

How many of you do laundry??





Combine these like terms:


$$\begin{array}{c} -y \\ -2y \quad y \quad 5y \\ 16y \end{array} = \bigcirc$$

Combine these like terms:

$$\begin{matrix} 3xy & 10xy \\ -2xy & xy \\ -7xy & \end{matrix} = \bigcirc$$

Combine these like terms:

$$\begin{array}{r} -4x^2 - x^2 \\ -14x^2 + x^2 \\ 8x^2 \end{array} = \bigcirc$$

Identify like terms.

1. $3a$ b^2 b^3 $4b^2$ 4 $5a$

2. x x^4 $4x$ $4x^2$ $4x^4$ $3x^2$

3. $6m$ $6m^2$ n^2 $2n$ 2 $4m$ $5n$

4. $12s$ $7s^4$ $9s$ s^2 5 $5s^4$ 2

Terms that have the same variable and the same degree

Containing the same letter and the same exponent

Like Terms

You can add and subtract LIKE TERMS

Remember for "MINUS" - same-change-change

1. for 'minus' - same-change-change

2. use circles, squares, triangles, lines or colored hi-liters to group like terms

3. Use integer rules to combine

Combine like terms.

5. $2p + 22q^2 - p$

7. $n^4 + n^3 + 3n - n - n^3$

9. $32m^2 + 14n^2 - 12m^2 + 5n -$

Try These - on your side!

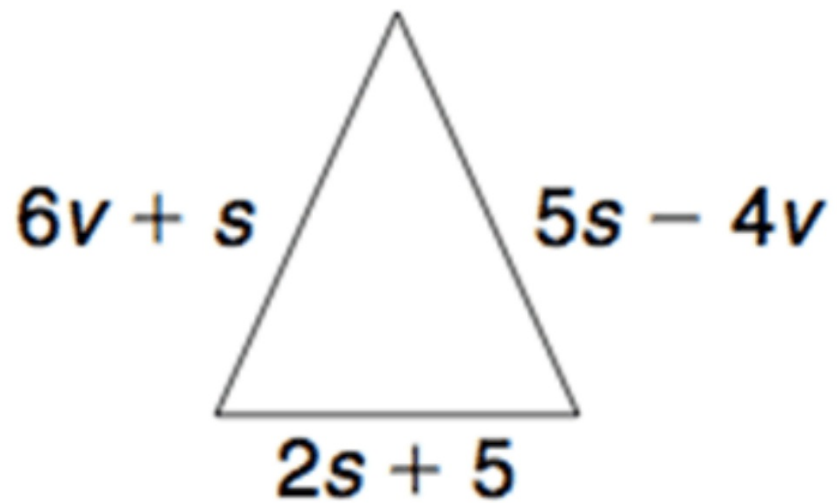
6. $x^2 + 3x^2 - 4^2$

8. $4a + 4b + 2 - 2a + 5b - 1$

10. $2h^2 + 3g - 2h^2 + 2^2 - 3 + 4g$

How is this related to our topic today?

Find the perimeter...



Cornell Notes
Distribution
Word
Problems

Warm Up

Simplify each expression by Combining Like Terms.

$$3a + 5a$$

$$4a - 5a + 6a$$

$$6b - 5 - 7b$$

$$-2b - 8 - b + 9$$

**DAY
(H)**

Warm-Up

Evaluate the expression.

1. $9y - 4y$, $y = \frac{1}{5}$

2. $\frac{2k^2 - 3k^2 + 4}{k}$, $k = 2$

AGENDA

- Cornell Notes:
Distributive Property

Simplify each expression by combining like terms.

3. $a^2 + 2b + 3a^2 - c + b$

4. $16m^2 + 8n^2 - 17m^2 + 5n - 3$

5. Write an expression for the perimeter of the square.




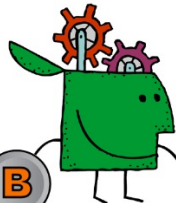
$2 + 3a$

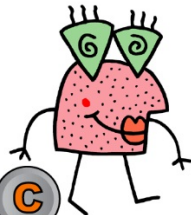
Flashback!

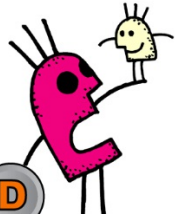
Which three options represent equivalent fractions?

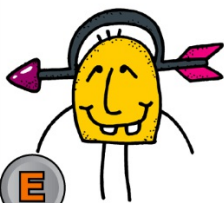
Response category: Enhanced multiple choice


A  $\frac{3}{9}$

B  $\frac{9}{18}$

C  $\frac{6}{18}$

D  $\frac{1}{9}$

E  $\frac{1}{3}$

F  $\frac{2}{3}$

ANSWER

DISTRIBUTIVE PROPERTY

Definition

Distributive Property

If I multiply a number by a sum, it is the same as multiplying that number by each number in the sum and adding their products together.

Example: $2(4 + 6)$

$$\begin{array}{l} \blacksquare = \square \\ \blacksquare = \square \\ \blacksquare = \square \end{array}$$

Example: $2(x + 6)$

$$\begin{array}{l} \blacksquare = \square \\ \blacksquare = \square \end{array}$$

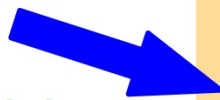
Think: Can we
ADD a variable
and constant?

Additional Examples **DISTRIBUTIVE PROPERTY**

Example: $2(3 - p)$

$$2(3 - p) = 2(3) - 2(p)$$

$$2(3 - p) = 6 - 2p$$



SIDE NOTE:

$2(3 - p)$
is the same as
 $(3 - p) \bullet 2$
or
 $(3 - p)^2$

Example: $x(y + 2y)$

$$x(y + 2y) = x(y) + x(2y)$$

$$x(y + 2y) = xy + 2xy$$

$$x(y + 2y) = 3xy$$

Example: $3a - 2(3 + a)$

$$\begin{aligned} 3a + -2(3 + a) &= 3a + -2(3) + -2(a) \\ &= \boxed{3a} + -6 + \boxed{-2a} \\ &= \end{aligned}$$

**Same-Change-Change
for
SUBTRACTION**



Your turn...

$$2(4 + 9w)$$

$$-4(-4d - 5)$$

$$2(3v - 8)$$

$$4(-6z + 4)$$

How is this related to our topic today?

Find the area...

$b + 2$

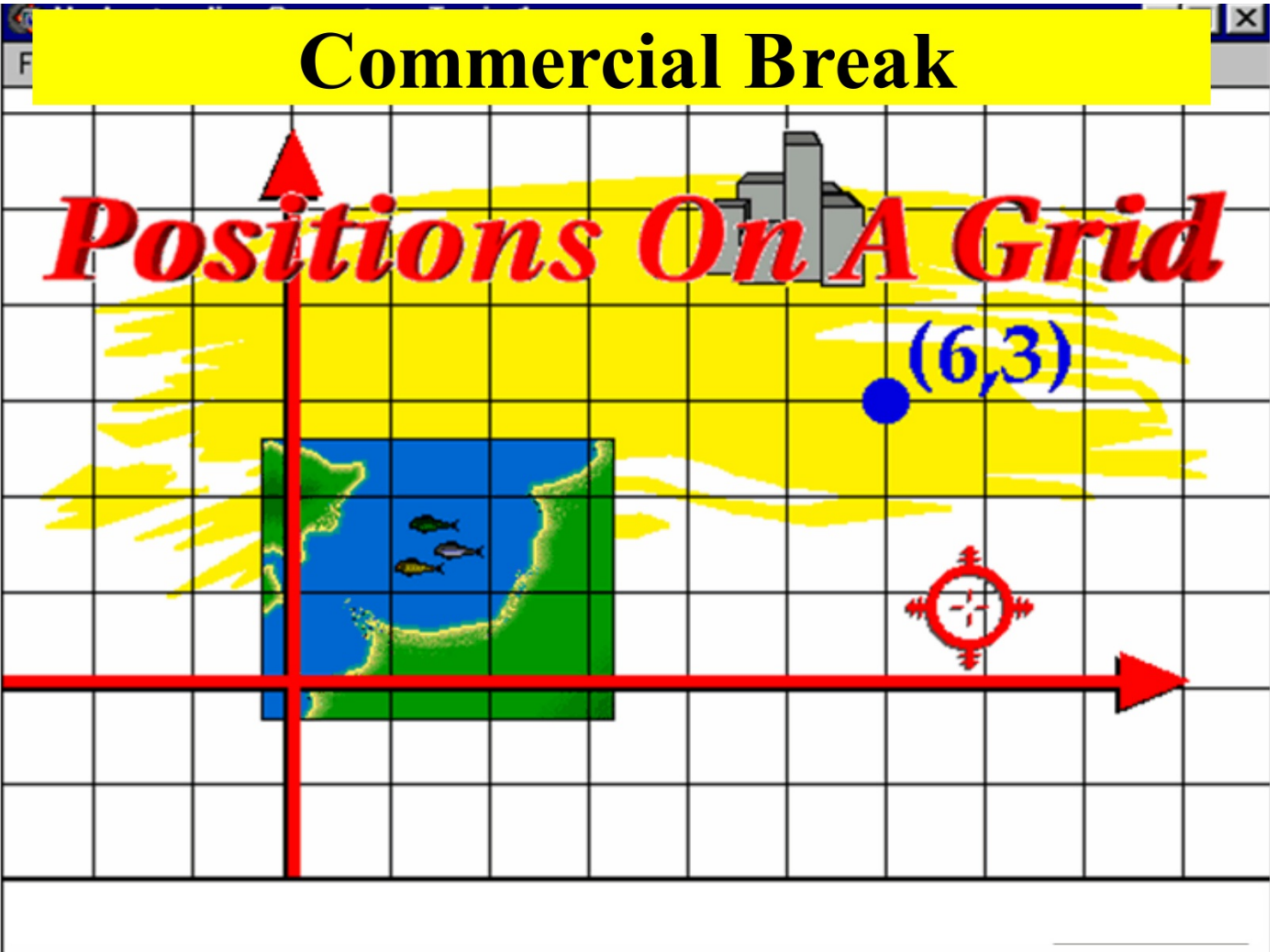
a



Commercial Break

Positions On A Grid

(6,3)



**Coordinate
Plane**

LEQ: How can we graph points on a Coordinate Plane?

Quadrants

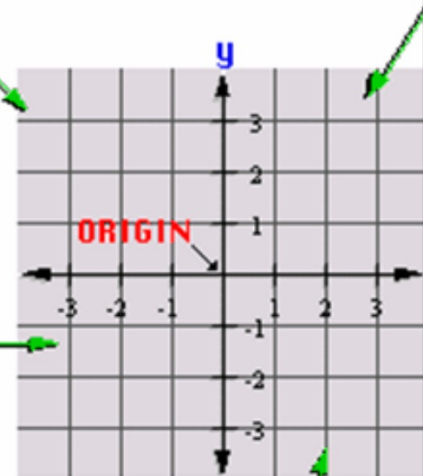
Ordered Pairs: Quadrants and Cartesian Plane

A grid can be used to locate and describe precise positions

This is the **First** Quadrant.

This is the **Second** Quadrant.

This is the **Third** Quadrant.



This is the **Fourth** Quadrant.

**Coordinate
Plane**

LEQ: How can we graph points on a Coordinate Plane?

**Graphing
Points**

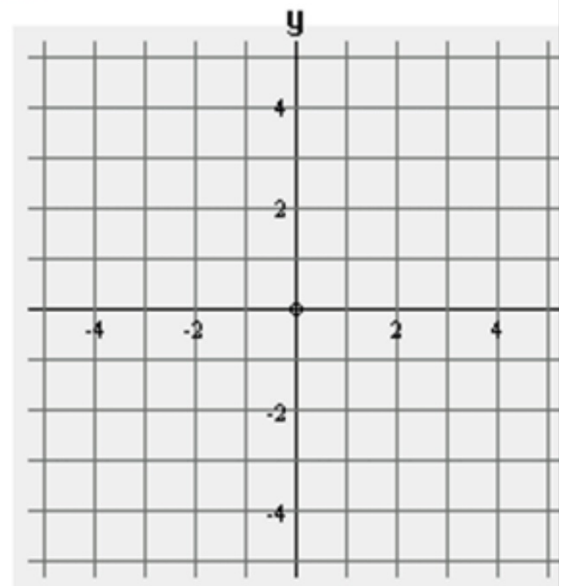
Ordered Pairs: Finding a Point

(3,5)

(4,-2)

(-1,-3)

(-2,1)



Try
These

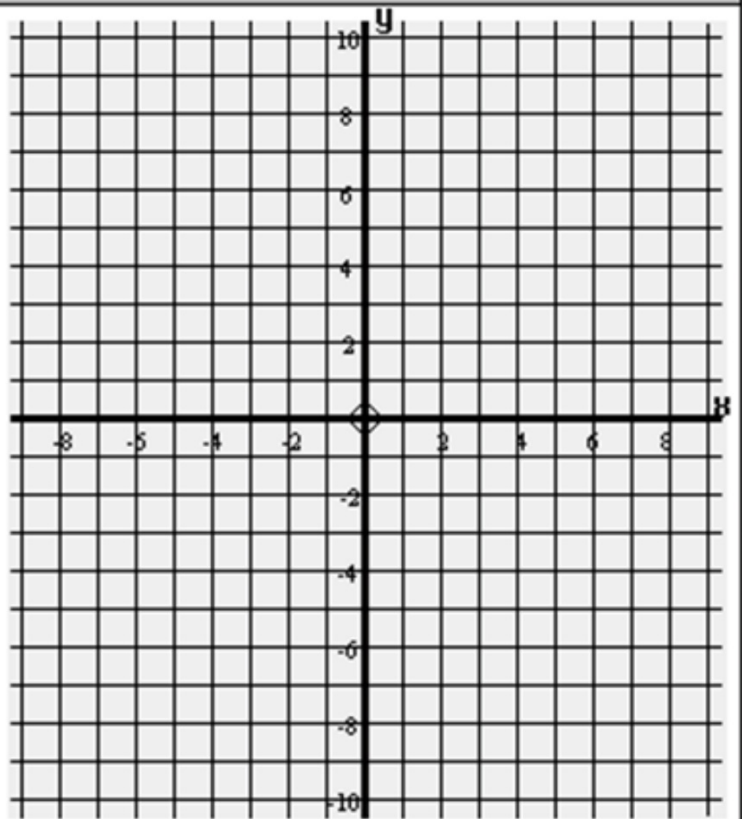
$(4,5)$

$(-8,+3)$

$(-5,-1)$

$(-6,3)$

$(0,-7)$



Positions on A Grid

Proceed

WORD PROBLEM PRACTICE

Sophie caught twice as many fish as her dad. If her dad caught F fish, how many did Sophie catch?

Which is the equivalent of the following $7(5n + 1)$?

A $36n$

B $42n$

C $35n + 1$

D $35n + 7$

Which of the following is equivalent to $3(8x + 2)$?

A $26x$

B $30x$

C $24x + 2$

D $24x + 6$

Erica volunteered to go to the board to show how to correctly add $(x - 1)$ and $3(x + 2)$. What should Erica's answer be?

Simplify.

$$5b - 2(7 - b)$$

**What is the simplified form of
 $4(2x - 5y) - 3x$?**

Copy the given expression and chart. Choose the correct answer. in complete sentences explain why your selection is correct and why each of the others are not.

$$4(2x + 10y)$$

$8(x + 5y)$	$8x + 10y$
$8(x + 10y)$	$8x + 14y$