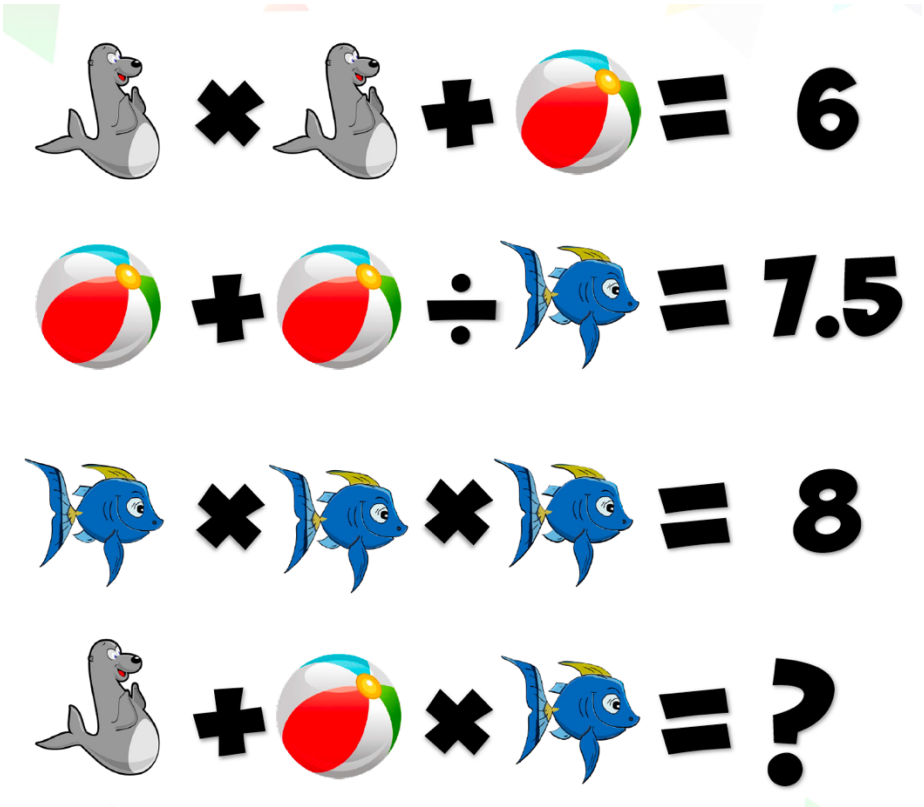
Summer Math Activities

for students entering

8th Grade



Please use this packet of math activities during the summer to continue practicing your skills. It will not be collected, however, we encourage you to spend time with math to help strengthen the skills you have worked hard to learn.

We look forward to seeing you soon!

The Nipher Math Team

NAME: _____

ONLINE RESOURCES



The following resources were checked by teachers and are considered appropriate. However, parents should always monitor their child's use of technology.

Basic Facts	**www.xtramath.org** ***focus on multiplication and division***	
Specific Skills	**www.IXL.com/math** **Log-In to school account using CLASSLINK**	
Grade Level Lessons	**https://www.khanacademy.org**	
Math Puzzles	**https://www.mashupmath.com/freemathpuzzles**	
Digital Flash Cards	**https://toytheater.com/math-flash-cards/**	

MATH CARD GAMES

Playing games involving reasoning and numbers can help your child gain confidence in math. These games can all be played with a regular deck of cards: **Crazy 8's, Rummy, Go Fish, Solitaire, Speed, Spoons**. The following pages have directions for a few school math card games to try too!

Secrets of The Great Pyramid

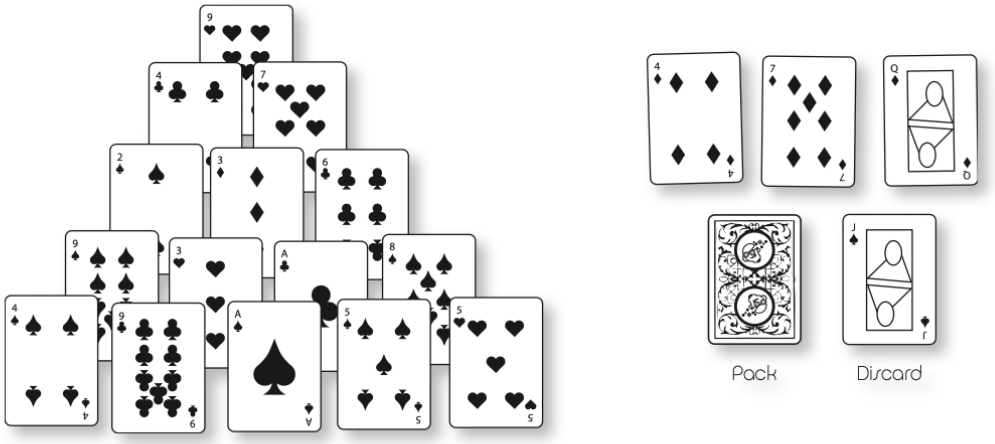
Materials

One deck of playing cards. Jokers are removed. Aces = 1, Jacks = 11, Queens = 12, Kings = 13, all other cards face value.

Rules and Play

1. The game *Secrets of the Great Pyramid* is for one player/team using on deck of cards.

2. Deal 15 cards face up in a pyramid as shown below. Then deal three cards for use in attempting to remove cards from the pyramid (4, 7, 12). Place the remaining cards face down on the playing surface.



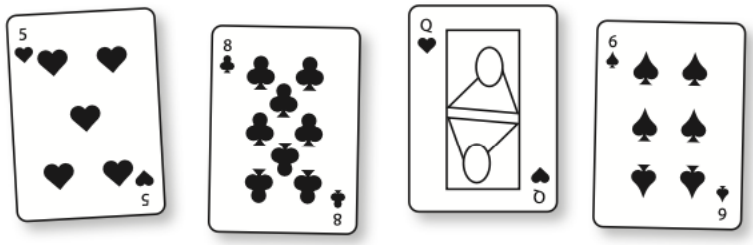
3. The object of the game is to remove all 15 cards from the pyramid by combining the value of two or three cards from the pack. You can add, subtract, multiply, or divide. Play begins by attempting to remove cards from the bottom row of the pyramid. In the example above, we could remove the 5 of Spades or the 5 of Hearts because they are both "free" and 12 – 7 =5. We could also have removed the 4 of Spades, 9 of Clubs or the Ace of Spades by using all three cards: 7 – (12+4)= 4; 12- 7 +4= 9; 12- (7+4)= 1. Players must decide which move to make, using either two or three cards.

4. Any unused card is returned to the pack and can be used later. If you cannot form a sentence that will remove a card, then place these cards in the discard pile and deal a new set of three.

5. Continue play until the pyramid is cleared or the pack is depleted. Record the results of each game on the graph on the next page. Each player is allowed only one pass through the pack.

Lucky 13 Challenge

The numbers from 1 to 13 can be formed using the four cards below (Queen = 12). You may use addition, subtraction, multiplication, division, place value, exponents, square roots, factorials, or even decimal points. The first two problems have been done for you. See how many you can find. Record your results below.



1 (8 - 5) - (12 / 6) = 1

2 (12 - 6) / (8 - 5) = 2

3 _____

4 _____

5 _____

6 _____

7 _____

8 _____

9 _____

10 _____

11 _____

12 _____

13 _____

***Ready for more?**

Draw your own 4 cards and see how many numerical expressions, from 1-13, you can create.

Triple Play

Materials

One deck of playing cards.

Rules and Play

1. *Triple Play* is a card game for two to four players/teams.

2. The dealer removes all of the face cards and Tens from the deck. Aces = 1, Jokers= 0.

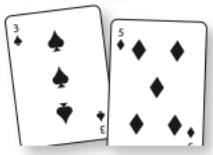
3. The dealer places the cards face down in one, two, three, four or five piles, depending up on the maturity of the players and the difficulty level desired. There should be an equal number of cards in each pile.

4. Play begins by having the dealer turn over the top card in each pile. Samples involving one- and two- digit games are shown below.

Tripling 1-Digit Numbers



Tripling 2-Digit Numbers



5. The first player/team who can correctly triple the number shown on the card(s) wins the set of cards. If a tie results, the top card(s) are set aside from each pile and either buried or become a part of winnings in the next round.

6. Play continues until the piles are depleted. The player/team with the most cards wins the game.

***This game is like the popular card game "speed" but involves math calculations too. Have fun playing!**

WEEKLY MATH PRACTICE for Summer Between 7th and 8th Grade Weekly Tracker

WEEK #:	TOPIC:	PAGES: *Check when complete.*	QUESTIONS: *Note topics to review.*
1	Fraction, Decimal, Percent, Absolute Value, Order of Operations	p. 2, 3, 4 ☐	
	Combining Like Terms	p. 5 ☐	
2	Solving 2-Step Equations and Integers Practice (1)	p. 6, 7, 8 ☐	
3	Integers Practice (2)	p. 9 ☐	
	Solving 2-Step Equations	p. 10 ☐	
4	Integers Practice (3)	p. 11 ☐	
	Solving 2-Step Equations	p. 12 ☐	
5	Integers Practice (4)	p. 13 ☐	
	Solving 2-Step Equations	p. 14 ☐	
6	Integers Practice (5)	p. 15 ☐	
	Solving 2-Step Equations	p. 16 ☐	
7	Integers Practice (6)	p. 17 ☐	
	Solving 2-Step Equations	p. 18 ☐	
8	Integers Practice (7)	p. 19 ☐	
	Solving 2-Step Equations	p. 20 ☐	
9	Integers Practice (8)	p. 21 ☐	
	Solving 2-Step Equations	p. 22 ☐	
10	Combining Like Terms	p. 23 ☐	
	Distributive Property and Practice	p. 24, 25, 26 ☐	
11	Writing and Graphing Inequalities	p. 27 ☐	
12	Solving Inequalities	p. 28, 29 ☐	

Fractions and Decimals

You should know certain decimal and fraction equivalences by memory.

$\frac{1}{2}$ $\frac{1}{3}$ $\frac{1}{4}$ $\frac{2}{3}$ $\frac{3}{4}$

Converting Fractions to Decimals

Divide the numerator by the denominator (top dog goes in the house).

$\frac{3}{8}$

Converting Decimals to Fractions

Read the decimal aloud and write as a fraction, then reduce.

0.42 0.125

Percentages

The ratio of a number compared to 100.

75% means…
you made 75 out of 100 shots on goal
or scored 75 out of 100 points on a test
or came to school 75 out of 100 days

Converting Percent to Decimal

Divide by 100, move the decimal two places LEFT.

25% **50%** **5%** **100%**

Converting Decimal to Percent

Multiply by 100, move the decimal two places RIGHT.

0.60 **0.815** **0.02** **1.76**

Practice Problems

1. Convert $\frac{3}{4}$ to a decimal.	2. Convert $\frac{1}{3}$ to a decimal.
3. Convert $\frac{5}{2}$ to a decimal.	4. Convert $\frac{10}{7}$ to a decimal.
5. Convert 23.5% to a decimal.	6. Convert 0.73 to a percent.

7. Insert the symbol $<$, $>$, $=$ that makes each of the following statements true.

Remember: <u>absolute value</u> is the distance the number is from 0 on the number line:

a) $|-5|$_____$-|5|$

b) $\sqrt{4}$_____$|2|$

c) $|-5|$_____$|5|$

d) 2 _____ |-16|

e) $-\frac{4}{2}$_____$|-2|$

1. $2 \cdot 3 + |6 - 8|$

2. $\frac{9}{5}(20) + 32$

3. $|-8 \cdot 2| - 4^2$

These expressions have been simplified incorrectly. Describe and correct the error.

4. $(-6)^2 - 4 \bullet 2$ $= -36 + 4 \bullet 2$ $= -36 + 8$ $= -28$	5. $3 \bullet 4 - 4 + 6$ $= 12 - 4 + 6$ $= 12 - 10$ $= 2$

Practice Problems

1. Color the like terms with the same color.

$5y$	$2x^2y$	x^2	x^2y	$8y$
$2xy^2$	$7y^3$	$4x^2$	$7.2y^3$	$88xy^2$
x^3	$10x^3$	*free*	$3.4x^3$	$\frac{1}{2}x^3$
$3xy^2$	$5y^3$	$5x^2$	$3.7y^3$	$9xy^2$
$\frac{y}{2}$	$0.3x^2y$	$\frac{3}{4}x^2$	$1.2x^2y$	$\frac{1}{2}y$

Simplify the following expressions.

2.) $5x+3-2x+3$

3.) $4x^2-7x+2+5x-8$

4.) $50+t-st+7t+6st$

5.) $6-3n+2n-3+n^2+n^2$

6.) $(5+2m)4$

7.) $2x^2+3y+5x-2(x+6y)$

8.) $4a+5(a+2)$

9.) $7y+(5-y)2$

WEEK 2: Solving Two-Step Equations

You can think of a two-step equation like a problem within a problem. It requires the inverse of 2 operations to find the solution. To solve a two-step equation, you must reverse the order of operations for multiply/divide and add/subtract.

Golden Rule: *What you do to one side you must also do to the other, this keeps your equation balanced.*

Follow these steps:

1. Cancel out the constant term by undoing the addition or subtraction.
2. Cancel out the coefficient by undoing the multiplication or division..
3. Check your solution by plugging your solution back in.

1. $4s + 8 = 20$

2. $\frac{x}{2} - 4 = 28$

3. $6 - \frac{x}{3} = 24$

4. $-5y + 10 = -25$

ID: 1

Name_____

Integer Warm-Up

Date_____

Evaluate each expression.

1) $(-2) - 6$

2) $(-5) + (-3)$

3) $(-7) + (-7)$

4) $(-7) + (-3)$

5) $(-8) + (-7)$

6) $3 - (-7)$

7) $2 - (-3)$

8) $1 - 1$

9) $3 + (-3)$

10) $(-1) - 6$

11) $4 - 6$

12) $(-7) - 6$

Find each product.

13) $(-6)(9)$

14) $(9)(-9)$

15) $(-5)(8)$

16) $(8)(-2)$

Find each quotient.

17) $-40 \div 4$

18) $49 \div -7$

19) $-40 \div -4$

20) $-40 \div 10$

Name_____

Equations Warm-Up

Date_____

Solve each equation.

1) $-4x + 2 = 46$

2) $6 + 6n = 114$

3) $\frac{b}{4} + 3 = -2$

4) $-4 + 9x = 113$

5) $-1 + 6v = 53$

6) $9 + \frac{n}{2} = 14$

7) Paul had $24 to spend on eight raffle tickets. After buying them he had $0. How much did each raffle ticket cost?

8) You had $20 to spend on four advocados. After buying them you had $12. How much did each advocado cost?

ID: 2

WEEK 3

Name_____

Integer Warm-Up

Date_____

Evaluate each expression.

1) $3 + (-3)$

2) $5 + (-8)$

3) $7 + (-5)$

4) $(-1) + 1$

5) $(-7) - 5$

6) $3 + (-7)$

7) $(-4) - (-3)$

8) $2 + (-5)$

9) $7 - 1$

10) $7 + (-3)$

11) $(-3) + (-7)$

12) $(-7) - (-8)$

Find each product.

13) $(-4)(6)$

14) $(4)(-2)$

15) $(-10)(10)$

16) $(2)(-9)$

Find each quotient.

17) $-60 \div -6$

18) $32 \div -8$

19) $-14 \div -2$

20) $63 \div -9$

Name_____

Equations Warm-Up

Date_____

Solve each equation.

1) $3x + 8 = 23$

2) $8x + 10 = 18$

3) $-1 + 4x = -25$

4) $8 + \frac{n}{2} = 15$

5) $\frac{k}{2} - 2 = -6$

6) $\frac{p}{2} - 2 = 8$

7) 133 students went on a field trip. Three buses were filled and 10 students traveled in cars. How many students were in each bus?

8) Ming bought a magazine for $2 and four candy bars. She spent a total of $22. How much did each candy bar cost?

WEEK 4

Name_____

Integer Warm-Up

Date_____

Evaluate each expression.

1) $8 + (-3)$

2) $(-3) - (-8)$

3) $7 + (-7)$

4) $1 + (-3)$

5) $5 - (-4)$

6) $(-6) + (-7)$

7) $(-2) - (-8)$

8) $(-7) - 5$

9) $(-6) - 1$

10) $(-3) - 5$

11) $(-3) - (-4)$

12) $(-6) - 7$

Find each product.

13) $(8)(-7)$

14) $(5)(-3)$

15) $(-2)(-9)$

16) $(-10)(6)$

Find each quotient.

17) $6 \div -6$

18) $-30 \div -10$

19) $12 \div -3$

20) $-24 \div -3$

Name_____

Equations Warm-Up

Date_____

Solve each equation.

1) $\frac{x}{9} - 4 = -2$

2) $-2 + \frac{v}{14} = -1$

3) $4n - 9 = 15$

4) $-5 - 7b = 100$

5) $2 + \frac{x}{6} = 1$

6) $\frac{r}{2} + 8 = 3$

7) Adam spent $15 on a magazine and some notepads. If the magazine cost $5 and each notepad cost $2, then how many notepads did he buy?

8) You bought a magazine for $6 and some notepads for $5 each. You spent a total of $26. How many notepads did you buy?

WEEK 5

Name_____

Integer Warm-Up

Date_____

Evaluate each expression.

1) $7-(-1)$

2) $(-2)-1$

3) $5+(-3)$

4) $(-6)-(-8)$

5) $2-(-8)$

6) $(-5)+(-4)$

7) $(-5)-(-8)$

8) $(-1)-(-5)$

9) $(-3)-5$

10) $1-5$

11) $1+(-8)$

12) $(-1)-(-3)$

Find each product.

13) $(-4)(8)$

14) $(10)(-8)$

15) $(7)(-5)$

16) $(10)(-10)$

Find each quotient.

17) $-63 \div -7$

18) $-20 \div 2$

19) $6 \div -1$

20) $12 \div -4$

Name_____

Equations Warm-Up

Date_____

Solve each equation.

1) $\frac{p}{2} - 1 = 4$

2) $-2k + 5 = 43$

3) $5m + 3 = -7$

4) $-8 + \frac{n}{3} = -13$

5) $7 - 5r = 77$

6) $9 + \frac{x}{5} = 11$

7) You had $22 to spend on eight raffle tickets. After buying them you had $6. How much did each raffle ticket cost?

8) The sum of three consecutive even numbers is 84. What is the smallest of these numbers?

ID: 5

WEEK 6

Name_____

Integer Warm-Up

Date_____

Evaluate each expression.

1) $(-2)+5$

2) $5-(-4)$

3) $(-1)-(-8)$

4) $(-4)-5$

5) $(-5)+5$

6) $(-5)+(-8)$

7) $(-2)+(-4)$

8) $(-7)+1$

9) $2-5$

10) $(-8)+(-3)$

11) $6-(-8)$

12) $2-1$

Find each product.

13) $(-8)(-10)$

14) $(-5)(7)$

15) $(-9)(7)$

16) $(9)(-4)$

Find each quotient.

17) $-6 \div -2$

18) $2 \div -2$

19) $24 \div -4$

20) $-56 \div -8$

Name_____

Equations Warm-Up

Date_____

Solve each equation.

1) $-5+\frac{a}{2}=-10$

2) $\frac{k}{5}-10=-8$

3) $-2+\frac{n}{5}=0$

4) $-9x+8=170$

5) $2v-8=-20$

6) $9+\frac{b}{7}=11$

7) For a field trip 25 students rode in cars and the rest filled three buses. How many students were in each bus if 133 students were on the trip?

8) You had $21 to spend on four pens. After buying them you had $5. How much did each pen cost?

WEEK 7

Name_____

Integer Warm-Up

Date_____

Evaluate each expression.

1) $(-8)-(-4)$

2) $(-5)+1$

3) $2+(-4)$

4) $(-4)+5$

5) $6-5$

6) $(-7)+(-4)$

7) $(-4)+8$

8) $5-5$

9) $(-1)+(-8)$

10) $(-7)+(-8)$

11) $6-(-8)$

12) $3-(-7)$

Find each product.

13) $(-3)(-8)$

14) $(-6)(-4)$

15) $(-9)(-1)$

16) $(9)(-4)$

Find each quotient.

17) $16 \div -8$

18) $-40 \div 4$

19) $-8 \div 4$

20) $-42 \div 7$

ID: 6

Name_____

Equations Warm-Up

Date_____

Solve each equation.

1) $3x + 4 = -14$

2) $6p + 1 = 91$

3) $\frac{m}{3} - 7 = -5$

4) $\frac{n}{5} - 8 = -6$

5) $-4 + \frac{k}{14} = -5$

6) $-8n - 1 = -121$

7) 188 students went on a field trip. Eight buses were filled and 20 students traveled in cars. How many students were in each bus?

8) Elisa rented a bike from Jasmine's Bikes. It cost $13 plus $7 per hour. If Elisa paid $34, then she rented the bike for how many hours?

ID: 7

WEEK 8

Name_____

Integer Warm-Up

Date_____

Evaluate each expression.

1) $(-4)+(-8)$

2) $(-7)+5$

3) $3+(-8)$

4) $(-6)-1$

5) $8-(-4)$

6) $(-3)+(-4)$

7) $4+(-7)$

8) $6+(-4)$

9) $4-5$

10) $8-2$

11) $7-(-7)$

12) $(-8)-(-8)$

Find each product.

13) $(-10)(9)$

14) $(-7)(5)$

15) $(-10)(8)$

16) $(-4)(-6)$

Find each quotient.

17) $-80 \div -8$

18) $-24 \div 6$

19) $-63 \div 9$

20) $-42 \div -7$

ID: 7

Name_____

Equations Warm-Up

Date_____

Solve each equation.

1) $-9 + 7x = 40$

2) $3 + \frac{v}{2} = 7$

3) $9 + 10b = 199$

4) $-10 + 5n = -60$

5) $-3 + \frac{x}{3} = -1$

6) $-4a + 7 = 27$

7) For a field trip 18 students rode in cars and the rest filled seven buses. How many students were in each bus if 375 students were on the trip?

8) Joe's Bikes rents bikes for $17 plus $7 per hour. Shayna paid $45 to rent a bike. For how many hours did she rent the bike?

WEEK 9

Name_____

Integer Warm-Up

Date_____

Evaluate each expression.

1) $(-4)-(-8)$

2) $(-5)+(-4)$

3) $4+(-7)$

4) $8-(-8)$

5) $7+(-8)$

6) $7-(-4)$

7) $(-6)-(-4)$

8) $(-7)-4$

9) $(-2)-(-8)$

10) $(-6)-(-7)$

11) $1+(-4)$

12) $(-3)+5$

Find each product.

13) $(8)(-1)$

14) $(-5)(-2)$

15) $(-7)(-10)$

16) $(-9)(-9)$

Find each quotient.

17) $63 \div -7$

18) $-48 \div -6$

19) $-12 \div -3$

20) $12 \div -2$

ID: 8

Name_____

Equations Warm-Up

Date_____

Solve each equation.

1) $7 + \frac{n}{2} = 11$

2) $1 - 4m = 37$

3) $6 - 10r = -104$

4) $3n - 7 = 2$

5) $\frac{x}{5} + 1 = -3$

6) $10 + \frac{x}{20} = 11$

7) 266 students went on a field trip. Five buses were filled and 16 students traveled in cars. How many students were in each bus?

8) Pranav spent $17 on a magazine and two candy bars. If the magazine cost $7, then how much was each candy bar?

WEEK 10: Solving Equations with Like Terms

To solve equations with like terms first you must simplify both sides of the equation then solve the two-step equation that remains. Follow these steps:

1. Combine the like terms
2. Undo the constant term (addition or subtraction)
3. Undo the coefficient (multiplication or division)
4. Check your solution by plugging your solution back in.

Examples

1. $2x - 4 + 8x = 36$

2. $12 - 5x + 3x - 9 = 17$

Solving Equations with the Distributive Property

To solve equations with the distributive property first you must simplify both sides of the equation then solve the two-step equation that remains. Follow these steps:

1. Distribute evenly
2. Combine the like terms
3. Undo the constant term (addition or subtraction)
4. Undo the coefficient (multiplication or division)
5. Check your solution by plugging your solution back in.

Examples

1. $2(x - 4) + 8x = -38$

2. $7 + -5(x + 3) + 4x = 16$

Application Example

A student works at a job, which pays $6.00 per hour. This week the student also received a bonus of $50. If the total pay for the week was $284, how many hours did the student work?

Practice Problems

Solve and check each equation below.

1. $10t + 13 - 16 = -83$	2. $32c + 4c + 49 = 67$
3. $3(x + 2) = -5$	4. $2.5(4 + b) = -20$
5. $-28 = 3.6(m - 6)$	6. $6(3n - 7) - 2 = 19$
7. $\frac{3}{4}(8 + 2y) = 3$	8. $\frac{5b + 9}{4} = -1$

For #9-11, write and solve an equation to answer each question.

9. The sum of Bill's three test scores for the grading period is 264. There is one test remaining, and Bill would like to average 90 on her test. Bill uses the equation $90 = \frac{264 + s}{4}$ to find the fourth test score he must make. What is the test score?

10. The perimeter of a rectangular field is 1,750 yards. The length of the field is 250 yards. What is the width of the field?

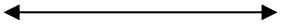
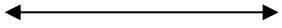
11. Kim has $212 in her savings account. Her goal is to have $800 in the account in 21 weeks. How much does Kim needs to save each week?

WEEK 11: Writing and Graphing Inequalities

There are many mathematical symbols used to express how numbers and variables relate to each other:

Meaning	Greater than	Greater than OR equal to	Equal to	Less than	Less than OR equal to	*Not* Equal to
Symbol	$>$	$\geq$	$=$	$<$	$\leq$	$\neq$

Graphing Inequalities

	$x <$ or $\leq$ **Shade Left**	$x >$ or $\geq$ **Shade Right**
$<$ or $>$ Open Circle	$x < 2$ 	$x > 2$ 
$\leq$ or $\geq$ Closed (solid) Circle	$x \leq 2$ 	$x \geq 2$ 

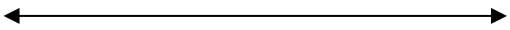
Graph each inequality below.

First make sure the variable is on <u>THE LEFT!</u> Point arrow the same direction as the inequality points

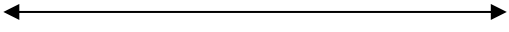
1. $x < 3$



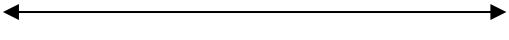
2. $x > -6$



3. $x = 5$



4. $x \geq -3$



WEEK 12: Solving Inequalities

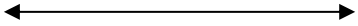
Follow the same steps used for equations to isolate the variable. There is one important thing to remember:

CAUTION:
When multiplying/dividing by a **NEGATIVE #**, **FLIP** the sign of the inequality!

Examples of when to reverse the symbol:

$-5x > 3$ $\qquad$ $\frac{x}{-2} < 4$ $\qquad$ $-1.5x > -13$

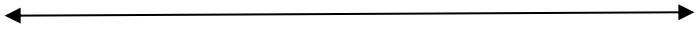
Solve and graph each inequality below.

$2x + 4 > 36$	$5 - 4x < 29$	$\frac{x}{-2} + 7 \leq 3$
		

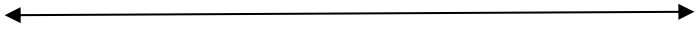
Inequality Practice Problems

Solve and graph each inequality.

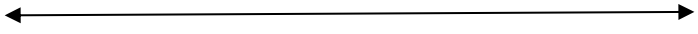
1. $4x < -8$



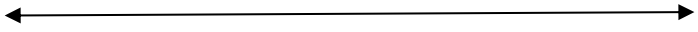
2. $-\frac{3}{4}x \geq 12$



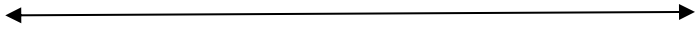
3. $-9x + 6 < 24$



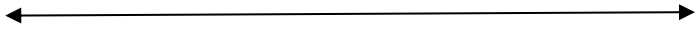
4. $16 \leq 9 - 7x$



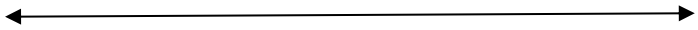
5. $2(x-4) \geq 3$



6. $\frac{1}{2}(x-8) < 2$



7. $15 \leq \frac{3}{2}(x+4)$





How to be a MATH PERSON:

Step 1:

Do math

(any type)

Step 2:

Be a person