Get Ready for 8th Grade! Summer Mathematics Activities

Dear Parents, Guardians, and Students,

Summer is a time to relax, explore, and have fun while keeping learning skills strong. Research shows that students can lose up to a month of math learning over the summer. Regular math practice helps students maintain their knowledge and confidence and prepare for the next grade. To help prevent this "summer slide," we have provided a variety of fun and engaging math activities for students to enjoy throughout the summer.

Daily Math Practice

We encourage students to complete one First in Math assignment each day to strengthen their math skills and build fluency.

Using the Summer Math Activity List

- Complete the activities in the boxes and cross off each activity as it is completed.
- Have fun completing a choice activity.
- Record completed activities on the activity log.
- Bring your completed log to school and show it to your new teacher to receive a special gift!

Helpful Materials

Keep these items nearby as you complete your summer math activities:

- Math notebook/journal from the school year
- A folder for organizing activities
- Blank paper
- Pencils
- A deck of playing cards
- Board games
- Coins

Our IB Transdisciplinary Theme, *How We Express Ourselves*, encourages scholars to explore, communicate, and apply ideas. Mathematics offers opportunities for creativity, problem-solving, and critical thinking. Whether cooking, shopping, traveling, or playing games, children can think mathematically in everyday situations.
Most importantly, encourage your child to explain their thinking as they solve problems. Asking questions such as, "How did you figure it out?" helps deepen understanding, build confidence, and strengthen mathematical reasoning.

We wish you a safe, enjoyable, and mathematically engaging summer!
Sincerely,

The Hempstead Public Schools Mathematics Team

Summer Math Activity Log

Activity log for student entering grade__________. Record the dates and descriptions of the math activities you complete. Bring this log back to your new teacher in September.

Activity #	Date Completed	Description of Activity
Example	7/2/24	The Math Problem about drawing 2 dogs. *OR* choice activity, like Candy Land…
#1		
#2		
#3		
#4		
#5		
#6		
#7		
#8		
#9		
#10		
#11		
#12		
#13		
#14		
#15		
#16		
#17		
#18		
#19		
#20		

Student's Name: ____

Parent Signature: ____

Summer Math Activity Log

Activity log for student entering grade__________. Record the dates and descriptions of the math activities you complete. Bring this log back to your new teacher in September.

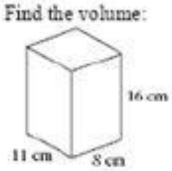
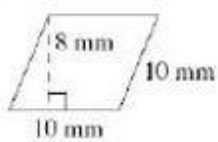
Activity #	Date Completed	Description of Activity
#21		
#22		
#23		
#24		
#25		
#26		
#27		
#28		
#29		
#30		
#31		
#32		
#33		
#34		
#35		
#36		
#37		
#38		
#39		
#40		

Student's Name: ____

Parent Signature: ____

Get Ready for Grade 8: Math Activities

Complete these math activities this summer. Each time, choose an activity from the boxes below – or from the back. Cross off a box when you do it and record the activity on your math log.

Choose from the Problem Set!!	Find the volume: 	**Make a list of all the prime numbers between 50 and 75.**	**LCM (5, 10) =** **LCM (8, 12) =**	$1\frac{3}{5} - 9 =$
$\lvert -5 \rvert =$ $-\lvert -5 \rvert =$ $-\lvert 5 \rvert =$	Choose from the Problem Set!!	What is the value of n? $\frac{3}{5} < \frac{n}{7} < \frac{4}{5}$	$2\frac{4}{5} \div 3\frac{1}{3} =$	**If John walks $\frac{1}{2}$ mile every $\frac{1}{4}$ hour, how far will he walk in three hours?**
Find the area: 	How many hours would it take you to count to one million? How many days would it take you to count to one million?	Choose from the Problem Set!!	**Complete the pattern:** **{3, 7, 11, 15, , , }**	**Do the following points represent a point on the graph of y=x-4?** **(0, -4) (5,-1)**
Sammy has fifty coins in his pocket that add up to one dollar. How many coins of each denomination are in Sammy's pocket?	**Find the area of a circle if the diameter is 20 feet.**	Calculate: $(-3\frac{5}{6}) - 4\frac{1}{2} =$	**If 1,000 gumballs cost \$20, how much would ten gumballs cost?**	Choose from the Problem Set!!
Solve: **3w + 8 = 20**	**In which quadrant(s) could the following points be found?** **A B C** **(5, 3) (5, -3) (-5,3)**	Choose from the Problem Set!!	**Dan's weekly salary is \$70 less than Jerry's, whose weekly salary is \$50 more than Sally's. If Sally earns \$280 per week, how much does Dan earn per week?**	What is the value of n? $\frac{n}{3} = \frac{10}{5}$
Mike pours 4/9 quarts of milk equally in 4 mugs. How much milk is in each mug?	Multiply: $\frac{1}{2} \times 2\frac{1}{4} \times \frac{1}{6} =$	**Order the following from least to greatest:** $\frac{3}{7}$, 43%, 0.4, 0.04	Choose from the Problem Set!!	**Add:** **2 + (-3) =** **(-2) + (-3)=** **(-2) + 3 =**
Choose from the Problem Set!!	**If a person rolls two number cubes, what is the probability of getting five as a sum?**	**Calculate:** **7 x 8=** **(-7) x 8=** **(-7) x (-8)=**	**Which is the better price?** **a. 4 for \$0.89** **b. 6 for \$1.39**	**Bob works $1\frac{1}{2}$ hours per day and is paid \$7 per hour. He works five days a week. How much money does he earn in 7 weeks?**

Get Ready for Grade 8
Choice Activities

1. Read a Cool Mathematics Book:

The Phantom Tollbooth by Norton Juster ***Math Curse*** by Jon Scieszka ***Chasing Vermeer*** by Blue Balliett ***All of the Above*** by Shelley Pearsall ***The Man Who Counted: A Collection of Mathematical Adventures*** by Malba Tahan	***The Number Devil*** by Hans Magnus Enzensberger ***Sir Cumference and the Dragon of Pi*** by Cindy Neuschwander ***Sir Cumference and the Sword in the Cone*** by Cindy Neuschwander
Find Mathematics Books to Read Online at Epic!: https://www.getepic.com/ Parents can sign up for free!	

2. Use a cool mathematics website!

http://illuminations.nctm.org http://www.shodor.org/interactivate/activities www.aaamath.com http://nlvm.usu.edu/en/nav/vlibrary.html https://www.youcubed.org/students/ https://www.firstinmath.com/	www.mathplayground.com www.funbrain.com https://www.khanacademy.org/ http://www.visualfractions.com/ https://www.prodigygame.com/

3. Exercise your brain with a strategy game. A great way to have fun with friends and family! Some good games are listed below. Maybe you've got some favorites of your own!

- **Sequence**
- **Chess**
- **Dominoes**
- **Blokus**
- **Quirkle**
- **Set**
- **Settlers of Catan**
- **Ticket to Ride**
- **Mastermind**
- **Go**

4. Take a free online course designed for learners of all levels of mathematics. Just follow the link below.

Stanford Online

PROBLEM SET

Lesson Summary

A type of quantity is proportional to a second if there is a constant number such that the product of each measure of the first type and the constant is equal to the corresponding measure of the second type.

Steps to determine if quantities in a table are proportional to each other:

1. For each row (or column), calculate $\frac{B}{A}$ where A is the measure of the first quantity, and B is the measure of the second quantity.
2. If the value of $\frac{B}{A}$ is the same for each pair of numbers, then the quantities in the table are proportional to each other.

Problem Set

In each table, determine if y is proportional to x. Explain why or why not.

1.

x	y
3	12
5	20
2	8
8	32

2.

x	y
3	15
4	17
5	19
6	21

3.

x	y
6	4
9	6
12	8
3	2

4. Kayla made observations about the selling price of a new brand of coffee that sold in three different-sized bags. She recorded those observations in the following table:

Ounces of Coffee	6	8	16
Price in Dollars	$2.10	$2.80	$5.60

   a. Is the price proportional to the amount of coffee? Why or why not?
   b. Use the relationship to predict the cost of a 20 oz. bag of coffee.

5. You and your friends go to the movies. The cost of admission is $9.50 per person. Create a table showing the relationship between the number of people going to the movies and the total cost of admission.

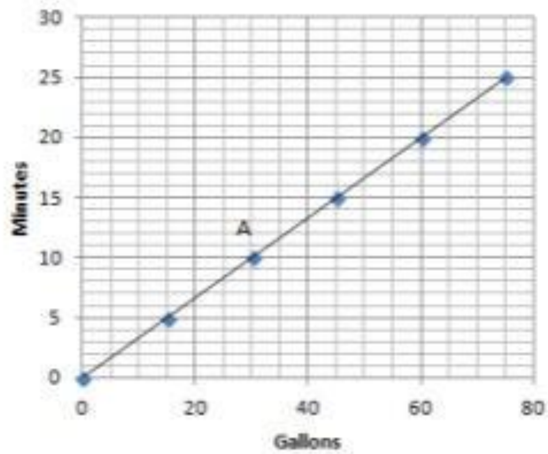
   Explain why the cost of admission is proportional to the amount of people.

6. For every 5 pages Gil can read, his daughter can read 3 pages. Let g represent the number of pages Gil reads, and let d represent the number of pages his daughter reads. Create a table showing the relationship between the number of pages Gil reads and the number of pages his daughter reads.

   Is the number of pages Gil's daughter reads proportional to the number of pages he reads? Explain why or why not.

Exercises

1. The graph below shows the amount of time a person can shower with a certain amount of water.



a. Can you determine by looking at the graph whether the length of the shower is proportional to the number of gallons of water? Explain how you know.

b. How long can a person shower with 15 gallons of water? How long can a person shower with 60 gallons of water?

c. What are the coordinates of point A? Describe point A in the context of the problem.

d. Can you use the graph to identify the unit rate?

Lesson Summary

To find missing quantities in a ratio table where a total is given, determine the unit rate from the ratio of two given quantities, and use it to find the missing quantities in each equivalent ratio.

Problem Set

1. Students in 6 classes, displayed below, ate the same ratio of cheese pizza slices to pepperoni pizza slices. Complete the following table, which represents the number of slices of pizza students in each class ate.

Slices of Cheese Pizza	Slices of Pepperoni Pizza	Total Slices of Pizza
		7
6	15	
8		
	$13\frac{3}{4}$	
$3\frac{1}{3}$		
		$2\frac{1}{10}$

2. To make green paint, students mixed yellow paint with blue paint. The table below shows how many yellow and blue drops from a dropper several students used to make the same shade of green paint.

   a. Complete the table.

Yellow (Y) (mL)	Blue (B) (mL)	Total (mL)
$3\frac{1}{2}$	$5\frac{1}{4}$	
		5
	$6\frac{3}{4}$	
$6\frac{1}{2}$		

   b. Write an equation to represent the relationship between the amount of yellow paint and blue paint.

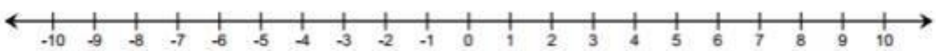
Lesson Summary

- On a number line, arrows are used to represent integers; they show length and direction.
- The length of an arrow on the number line is the absolute value of the integer.
- Adding several arrows is the same as combining integers in the Integer Game.
- The sum of several arrows is the final position of the last arrow.

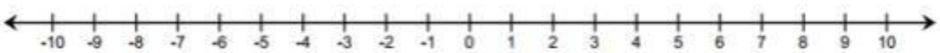
Problem Set

Represent Problems 1–3 using both a number line diagram and an equation.

1. David and Victoria are playing the Integer Card Game. David drew three cards, -6, 12, and -4. What is the sum of the cards in his hand? Model your answer on the number line below.

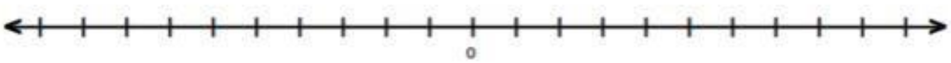


2. In the Integer Card Game, you drew the cards, 2, 8, and -11. Your partner gave you a 7 from his hand.
   a. What is your total? Model your answer on the number line below.



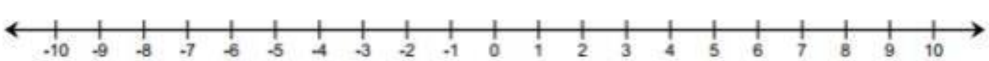
   b. What card(s) would you need to get your score back to zero? Explain. Use and explain the term *additive inverse* in your answer.

3. If a football player gains 40 yards on a play, but on the next play, he loses 10 yards, what would his total yards be for the game if he ran for another 60 yards? What did you count by to label the units on your number line?



4. Find the sums.
   a. $-2 + 9$
   b. $-8 + -8$
   c. $-4 + (-6) + 10$
   d. $5 + 7 + (-11)$

5. Mark an integer between 1 and 5 on a number line, and label it point Z. Then, locate and label each of the following points by finding the sums.



   a. Point A: $Z + 5$
   b. Point B: $Z + (-3)$
   c. Point C: $(-4) + (-2) + Z$
   d. Point D: $-3 + Z + 1$

> **Lesson Summary**
>
> To multiply signed numbers, multiply the absolute values to get the absolute value of the product. The sign of the product is positive if the factors have the same sign and negative if they have opposite signs.

Problem Set

1. Complete the problems below. Then, answer the question that follows.

$3 \times 3 =$	$3 \times 2 =$	$3 \times 1 =$	$3 \times 0 =$	$3 \times (-1) =$	$3 \times (-2) =$
$2 \times 3 =$	$2 \times 2 =$	$2 \times 1 =$	$2 \times 0 =$	$2 \times (-1) =$	$2 \times (-2) =$
$1 \times 3 =$	$1 \times 2 =$	$1 \times 1 =$	$1 \times 0 =$	$1 \times (-1) =$	$1 \times (-2) =$
$0 \times 3 =$	$0 \times 2 =$	$0 \times 1 =$	$0 \times 0 =$	$0 \times (-1) =$	$0 \times (-2) =$
$-1 \times 3 =$	$-1 \times 2 =$	$-1 \times 1 =$	$-1 \times 0 =$	$-1 \times (-1) =$	$-1 \times (-2) =$
$-2 \times 3 =$	$-2 \times 2 =$	$-2 \times 1 =$	$-2 \times 0 =$	$-2 \times (-1) =$	$-2 \times (-2) =$
$-3 \times 3 =$	$-3 \times 2 =$	$-3 \times 1 =$	$-3 \times 0 =$	$-3 \times (-1) =$	$-3 \times (-2) =$

   Which row shows the same pattern as the outlined column? Are the problems similar or different? Explain.

2. Explain why $(-4) \times (-5) = 20$. Use patterns, an example from the Integer Game, or the properties of operations to support your reasoning.

3. Each time that Samantha rides the commuter train, she spends $4 for her fare. Write an integer that represents the change in Samantha's money from riding the commuter train to and from work for 13 days. Explain your reasoning.

4. Write a real-world problem that can be modeled by $4 \times (-7)$.

Challenge:

5. Use properties to explain why for each integer a, $-a = -1 \times a$. (Hint: What does $(1 + (-1)) \times a$ equal? What is the additive inverse of a?)

Lesson Summary

Any terminating decimal can be converted to a fraction using place value (e.g., 0.35 is thirty-five hundredths or $\frac{35}{100}$). A fraction whose denominator includes only factors of 2 and 5 can be converted to a decimal by writing the denominator as a power of ten.

Problem Set

1. Convert each terminating decimal to a fraction in its simplest form.
   a. 0.4
   b. 0.16
   c. 0.625
   d. 0.08
   e. 0.012

2. Convert each fraction or mixed number to a decimal using an equivalent fraction.
   a. $\frac{4}{5}$
   b. $\frac{3}{40}$
   c. $\frac{8}{200}$
   d. $3\frac{5}{16}$

3. Tanja is converting a fraction into a decimal by finding an equivalent fraction that has a power of 10 in the denominator. Sara looks at the last step in Tanja's work (shown below) and says that she cannot go any further. Is Sara correct? If she is, explain why. If Sara is incorrect, complete the remaining steps.

$$\frac{72}{480} = \frac{2^3 \cdot 3^2}{2^5 \cdot 3 \cdot 5}$$

Lesson Summary

The real world requires that we represent rational numbers in different ways depending on the context of a situation. All rational numbers can be represented as either terminating decimals or repeating decimals using the long division algorithm. We represent repeating decimals by placing a bar over the shortest sequence of repeating digits.

Problem Set

1. Convert each rational number into its decimal form.

$\frac{1}{9} =$ ______________

$\frac{1}{6} =$ ______________

$\frac{2}{9} =$ ______________

$\frac{1}{3} =$ ______________ $\frac{2}{6} =$ ______________ $\frac{3}{9} =$ ______________

$\frac{4}{9} =$ ______________

$\frac{3}{6} =$ ______________

$\frac{5}{9} =$ ______________

$\frac{2}{3} =$ ______________ $\frac{4}{6} =$ ______________ $\frac{6}{9} =$ ______________

$\frac{7}{9} =$ ______________

$\frac{5}{6} =$ ______________

$\frac{8}{9} =$ ______________

2. Chandler tells Aubrey that the decimal value of $-\frac{1}{17}$ is not a repeating decimal. Should Aubrey believe him? Explain.

3. Complete the quotients below without using a calculator, and answer the questions that follow.

   a. Convert each rational number in the table to its decimal equivalent.

$\frac{1}{11} =$	$\frac{2}{11} =$	$\frac{3}{11} =$	$\frac{4}{11} =$	$\frac{5}{11} =$
$\frac{6}{11} =$	$\frac{7}{11} =$	$\frac{8}{11} =$	$\frac{9}{11} =$	$\frac{10}{11} =$

   Do you see a pattern? Explain.

Lesson Summary

Tape diagrams can be used to model and identify the sequence of operations to find a solution algebraically.

The goal in solving equations algebraically is to isolate the variable.

The process of doing this requires *undoing* addition or subtraction to obtain a 0 and *undoing* multiplication or division to obtain a 1. The additive inverse and multiplicative inverse properties are applied to get the 0 (the additive identity) and 1 (the multiplicative identity).

The addition and multiplication properties of equality are applied because in an equation, $A = B$, when a number is added or multiplied to both sides, the resulting sum or product remains equal.

Problem Set

1. A taxi cab in Myrtle Beach charges $\$2$ per mile and $\$1$ for every person. If a taxi cab ride for two people costs $\$12$, how far did the taxi cab travel?

2. Heather works as a waitress at her family's restaurant. She works 2 hours every morning during the breakfast shift and returns to work each evening for the dinner shift. In the last four days, she worked 28 hours. If Heather works the same number of hours every evening, how many hours did she work during each dinner shift?

3. Jillian exercises 5 times a week. She runs 3 miles each morning and bikes in the evening. If she exercises a total of 30 miles for the week, how many miles does she bike each evening?

4. Marc eats an egg sandwich for breakfast and a big burger for lunch every day. The egg sandwich has 250 calories. If Marc has $5{,}250$ calories for breakfast and lunch for the week in total, how many calories are in one big burger?

5. Jackie won tickets playing the bowling game at the local arcade. The first time, she won 60 tickets. The second time, she won a bonus, which was 4 times the number of tickets of the original second prize. Altogether she won 200 tickets. How many tickets was the original second prize?

Lesson Summary

- Calculations with rational numbers are used when recording investment transactions.
- Deposits are added to an account balance; money is deposited into the account.
- Gains are added to an account balance; they are positive returns on the investment.
- Withdrawals are subtracted from an account balance; money is taken out of the account.
- Losses are subtracted from an account balance; they are negative returns on the investment.
- Fees are subtracted from an account balance; the bank or financial company is charging you for a service.

Problem Set

1. You are planning a fundraiser for your student council. The fundraiser is a Glow in the Dark Dance. Solve each entry below, and complete the transaction log to determine the ending balance in the student account.

   a. The cost of admission to the dance is $7 per person, and all tickets were sold on November 1. Write an expression to represent the total amount of money collected for admission. Evaluate the expression if 250 people attended the dance.

   b. The following expenses were necessary for the dance, and checks were written to each company.

      - DJ for the dance—*Music Madness DJ* costs $200 and paid for on November 3.
      - Glow sticks from *Glow World, Inc.* for the first 100 entrants. Cost of glow sticks was $0.75 each plus 8% sales tax and bought on November 4.

   Complete the transaction log below based on this information

DATE	DESCRIPTION OF TRANSACTION	PAYMENT	DEPOSIT	BALANCE
	Beginning Balance	---	---	1,243.56

   c. Write a numerical expression to determine the cost of the glow sticks.

   Analyze the results.

   d. Write an algebraic expression to represent the profit earned from the fundraiser. (Profit is the amount of money collected in admissions minus all expenses.)

   e. Evaluate the expression to determine the profit if 250 people attended the dance. Use the variable p to represent the number of people attending the dance (from part (a)).

   f. Using the transaction log above, what was the amount of the profit earned?

Lesson Summary

We work backward to solve an algebraic equation. For example, to find the value of the variable in the equation $6x - 8 = 40$:

1. Use the addition property of equality to add the opposite of -8 to each side of the equation to arrive at $6x - 8 + 8 = 40 + 8$.
2. Use the additive inverse property to show that $-8 + 8 = 0$; thus, $6x + 0 = 48$.
3. Use the additive identity property to arrive at $6x = 48$.
4. Then use the multiplication property of equality to multiply both sides of the equation by $\frac{1}{6}$ to get: $\left(\frac{1}{6}\right)6x = \left(\frac{1}{6}\right)48$.
5. Then use the multiplicative inverse property to show that $\frac{1}{6}(6) = 1$; thus, $1x = 8$.
6. Use the multiplicative identity property to arrive at $x = 8$.

Problem Set

For each problem below, explain the steps in finding the value of the variable. Then find the value of the variable, showing each step. Write if–then statements to justify each step in solving the equation.

1. $7(m + 5) = 21$
2. $-2v + 9 = 25$
3. $\frac{1}{3}y - 18 = 2$
4. $6 - 8p = 38$
5. $15 = 5k - 13$

Lesson 2: Generating Equivalent Expressions

Classwork

Opening Exercise

Additive inverses have a sum of zero. Fill in the center column of the table with the opposite of the given number or expression, then show the proof that they are opposites. The first row is completed for you.

Expression	Opposite	Proof of Opposites
1	-1	$1+(-1)=0$
3		
-7		
$-\frac{1}{2}$		
x		
$3x$		
$x+3$		
$3x-7$		

Example 1: Subtracting Expressions

a. Subtract: $(40+9)-(30+2)$.

b. Subtract: $(3x+5y-4)-(4x+11)$.

Example 2: Combining Expressions Vertically

a. Find the sum by aligning the expressions vertically.
$(5a+3b-6c)+(2a-4b+13c)$

b. Find the difference by aligning the expressions vertically.
$(2x+3y-4)-(5x+2)$

Problem Set

1.

   a. Write two equivalent expressions that represent the rectangular array below.

   b. Verify informally that the two expressions are equivalent using substitution.

2. You and your friend made up a basketball shooting game. Every shot made from the free throw line is worth 3 points, and every shot made from the half-court mark is worth 6 points. Write an equation that represents the total number of points, P, if f represents the number of shots made from the free throw line, and h represents the number of shots made from half-court. Explain the equation in words.

3. Use a rectangular array to write the products in standard form.

   a. $2(x + 10)$

   b. $3(4b + 12c + 11)$

4. Use the distributive property to write the products in standard form.

   a. $3(2x - 1)$

   b. $10(b + 4c)$

   c. $9(g - 5h)$

   d. $7(4n - 5m - 2)$

   e. $a(b + c + 1)$

   f. $(8j - 3l + 9)6$

   g. $(40s + 100t) \div 10$

   h. $(48p + 24) \div 6$

   i. $(2b + 12) \div 2$

   j. $(20r - 8) \div 4$

   k. $(49g - 7) \div 7$

   l. $(14g + 22h) \div \frac{1}{2}$

5. Write the expression in standard form by expanding and collecting like terms.

   a. $4(8m - 7n) + 6(3n - 4m)$

   b. $9(r - s) + 5(2r - 2s)$

   c. $12(1 - 3g) + 8(g + f)$

Problem Set

1. Write each expression as the product of two factors.
   a. $1 \cdot 3 + 7 \cdot 3$
   b. $(1 + 7) + (1 + 7) + (1 + 7)$
   c. $2 \cdot 1 + (1 + 7) + (7 \cdot 2)$
   d. $h \cdot 3 + 6 \cdot 3$
   e. $(h + 6) + (h + 6) + (h + 6)$
   f. $2h + (6 + h) + 6 \cdot 2$
   g. $j \cdot 3 + k \cdot 3$
   h. $(j + k) + (j + k) + (j + k)$
   i. $2j + (k + j) + 2k$

2. Write each sum as a product of two factors.
   a. $6 \cdot 7 + 3 \cdot 7$
   b. $(8 + 9) + (8 + 9) + (8 + 9)$
   c. $4 + (12 + 4) + (5 \cdot 4)$
   d. $2y \cdot 3 + 4 \cdot 3$
   e. $(x + 5) + (x + 5)$
   f. $3x + (2 + x) + 5 \cdot 2$
   g. $f \cdot 6 + g \cdot 6$
   h. $(c + d) + (c + d) + (c + d) + (c + d)$
   i. $2r + r + s + 2s$

3. Use the following rectangular array to answer the questions below.

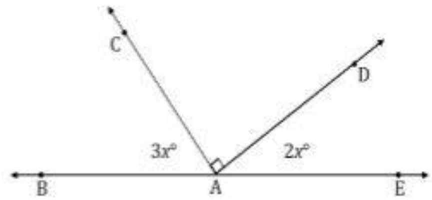
	?	?	?
?	15f	5g	45

   a. Fill in the missing information.
   b. Write the sum represented in the rectangular array.
   c. Use the missing information from part (a) to write the sum from part (b) as a product of two factors.

4. Write the sum as a product of two factors.
   a. $81w + 48$
   b. $10 - 25t$
   c. $12a + 16b + 8$

Exercise 1

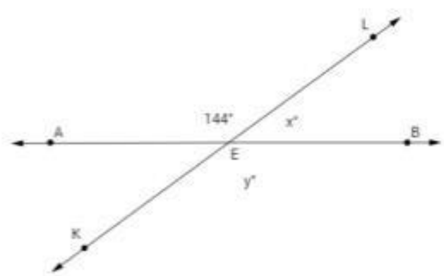
In a complete sentence, describe the angle relationship in the diagram.



Find the measurements of $\angle BAC$ and $\angle DAE$.

Example 2

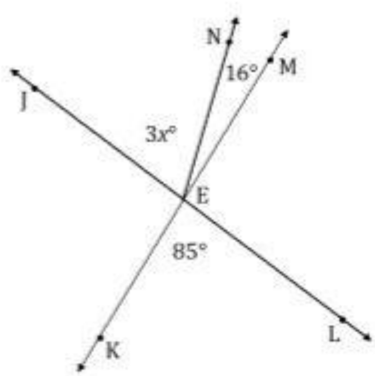
In a complete sentence, describe the angle relationship in the diagram.



Write an equation for the angle relationship shown in the figure and solve for x and y. Find the measurements of $\angle LEB$ and $\angle KEB$.

Exercise 2

In a complete sentence, describe the angle relationships in the diagram.

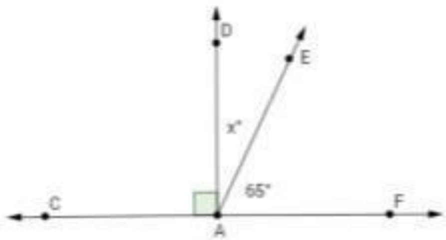


Write an equation for the angle relationship shown in the figure and solve for x.

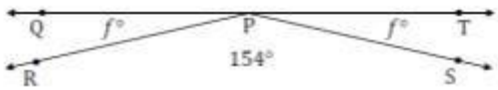
Problem Set

For each question, use angle relationships to write an equation in order to solve for each variable. Determine the indicated angles. You can check your answers by measuring each angle with a protractor.

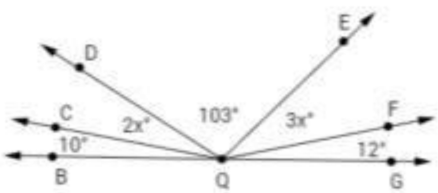
1. In a complete sentence, describe the relevant angle relationships in the following diagram. Find the measurement of $\angle DAE$.



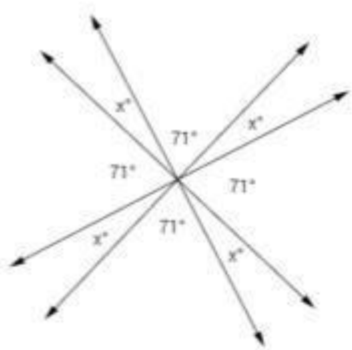
2. In a complete sentence, describe the relevant angle relationships in the following diagram. Find the measurement of $\angle QPR$.



3. In a complete sentence, describe the relevant angle relationships in the following diagram. Find the measurements of $\angle CQD$ and $\angle EQF$.



4. In a complete sentence, describe the relevant angle relationships in the following diagram. Find the measure of x.



Station 2

Die 1	Inequality	Die 2	Operation	New Inequality	Inequality Symbol Preserved or Reversed?
-3	$<$	4	Multiply by -1	$(-1)(-3) < (-1)(4)$ $3 > -4$	Reversed
			Multiply by -1		
			Multiply by -1		
			Multiply by -1		
			Multiply by -1		

Examine the results. Make a statement about what you notice and justify it with evidence.

Problem Set

1. Match each problem to the inequality that models it. One choice will be used twice.

________	The sum of three times a number and -4 is greater than 17.	a. $3x + -4 \geq 17$
________	The sum of three times a number and -4 is less than 17.	b. $3x + -4 < 17$
________	The sum of three times a number and -4 is at most 17.	c. $3x + -4 > 17$
________	The sum of three times a number and -4 is no more than 17.	d. $3x + -4 \leq 17$
________	The sum of three times a number and -4 is at least 17.	

2. If x represents a positive integer, find the solutions to the following inequalities.

   a. $x < 7$
   b. $x - 15 < 20$
   c. $x + 3 \leq 15$
   d. $-x > 2$
   e. $10 - x > 2$
   f. $-x \geq 2$
   g. $\frac{x}{3} < 2$
   h. $-\frac{x}{3} > 2$
   i. $3 - \frac{x}{4} > 2$

3. Recall that the symbol $\neq$ means *not equal to*. If x represents a positive integer, state whether each of the following statements is always true, sometimes true, or false.

   a. $x > 0$
   b. $x < 0$
   c. $x > -5$
   d. $x > 1$
   e. $x \geq 1$
   f. $x \neq 0$
   g. $x \neq -1$
   h. $x \neq 5$

4. Twice the smaller of two consecutive integers increased by the larger integer is at least 25.

   Model the problem with an inequality, and determine which of the given values 7, 8, and/or 9 are solutions. Then, find the smallest number that will make the inequality true.

5.

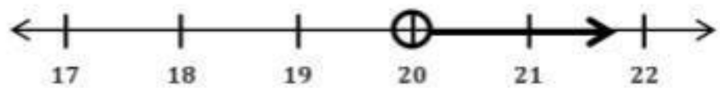
   a. The length of a rectangular fenced enclosure is 12 feet more than the width. If Farmer Dan has 100 feet of fencing, write an inequality to find the dimensions of the rectangle with the largest perimeter that can be created using 100 feet of fencing.
   b. What are the dimensions of the rectangle with the largest perimeter? What is the area enclosed by this rectangle

6. At most, Kyle can spend \$50 on sandwiches and chips for a picnic. He already bought chips for \$6 and will buy sandwiches that cost \$4.50 each. Write and solve an inequality to show how many sandwiches he can buy. Show your work and interpret your solution.

Problem Set

1. Ben has agreed to play fewer video games and spend more time studying. He has agreed to play less than 10 hours of video games each week. On Monday through Thursday, he plays video games for a total of $5\frac{1}{2}$ hours. For the remaining 3 days, he plays video games for the same amount of time each day. Find t, the amount of time he plays video games, for each of the 3 days. Graph your solution.

2. Gary's contract states that he must work more than 20 hours per week. The graph below represents the number of hours he can work in a week.

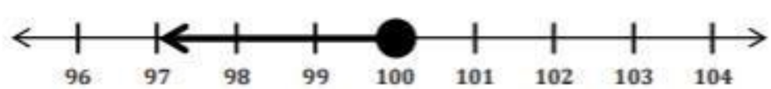


   a. Write an algebraic inequality that represents the number of hours, h, Gary can work in a week.
   b. Gary is paid $15.50 per hour in addition to a weekly salary of $50. This week he wants to earn more than $400. Write an inequality to represent this situation.
   c. Solve and graph the solution from part (b). Round to the nearest hour.

3. Sally's bank account has $650 in it. Every week, Sally withdraws $50 to pay for her dog sitter. What is the maximum number of weeks that Sally can withdraw the money so there is at least $75 remaining in the account? Write and solve an inequality to find the solution, and graph the solution on a number line.

4. On a cruise ship, there are two options for an Internet connection. The first option is a fee of $5 plus an additional $0.25 per minute. The second option costs $50 for an unlimited number of minutes. For how many minutes, m, is the first option cheaper than the second option? Graph the solution.

5. The length of a rectangle is 100 centimeters, and its perimeter is greater than 400 centimeters. Henry writes an inequality and graphs the solution below to find the width of the rectangle. Is he correct? If yes, write and solve the inequality to represent the problem and graph. If no, explain the error(s) Henry made.



Lesson 1: Percent

Classwork

Opening Exercise 1: Matching

Match the percents with the correct sentence clues.

25%	I am half of a half. 5 cubic inches of water filled in a 20 cubic inch bottle.
50%	I am less than $\frac{1}{100}$. 25 out of 5,000 contestants won a prize.
30%	I am the chance of birthing a boy or a girl. Flip a coin, and it will land on heads or tails.
1%	I am less than a half but more than one-fourth. 15 out of 50 play drums in a band.
10%	I am equal to 1. 35 question out of 35 questions were answered correctly.
100%	I am more than 1. Instead of the $1,200 expected to be raised, $3,600 was collected for the school's fundraiser.
300%	I am a tenth of a tenth. One penny is this part of one dollar.
$\frac{1}{2}\%$	I am less than a fourth but more than a hundredth. $11 out of $110 earned is saved in the bank.

Exercises 1–3

1. Sasha went shopping and decided to purchase a set of bracelets for 25% off the regular price. If Sasha buys the bracelets today, she will save an additional 5%. Find the sales price of the set of bracelets with both discounts. How much money will Sasha save if she buys the bracelets today?

2. A golf store purchases a set of clubs at a wholesale price of $250. Mr. Edmond learned that the clubs were marked up 200%. Is it possible to have a percent increase greater than 100%? What is the retail price of the clubs?

3. Is a percent increase of a set of golf clubs from $250 to $750 the same as a markup rate of 200%? Explain.

Lesson 10: Simple Interest

Classwork

To find the simple interest, use the following formula:

$$\text{Interest} = \text{Principal} \times \text{Rate} \times \text{Time}$$

$$I = P \times r \times t$$

$$I = Prt$$

- r is the percent of the principal that is paid over a period of time (usually per year).
- t is the time.
- r and t must be compatible. For example, if r is an annual interst rate, then t must be written in years.

Example 1: Can Money Grow? A Look at Simple Interest

Larry invests $100 in a savings plan. The plan pays $4\frac{1}{2}\%$ interest each year on his $100 account balance.

a. How much money will Larry earn in interest after 3 years? After 5 years?

b. How can you find the balance of Larry's account at the end of 5 years?

Exercise 1

Find the balance of a savings account at the end of 10 years if the interest earned each year is 7.5%. The principal is $500.

Example 2: Time Other Than One Year

A $1,000 savings bond earns simple interest at the rate of 3% each year. The interest is paid at the end of every month. How much interest will the bond have earned after 3 months?

Example 3: Solving for P, r, or t

Mrs. Williams wants to know how long it will take an investment of $450 to earn $200 in interest if the yearly interest rate is 6.5%, paid at the end of each year.

Exercises 1–2

1. How many 4-letter passwords can be formed using the letters A and B?

2. What percent of the 4-letter passwords contain
   a. No A's?
   b. Exactly one A?
   c. Exactly two A's?
   d. Exactly three A's?
   e. Four A's?
   f. The same number of A's and B's?

Example 2

In a set of 3-letter passwords, 40% of the passwords contain the letter B and two of another letter. Which of the two sets below meets the criteria? Explain how you arrived at your answer.

Set 1

BBB	AAA	CAC
CBC	ABA	CCC
BBC	CCB	CAB
AAB	AAC	BAA
ACB	BAC	BCC

Set 2

CEB	BBB
EBE	CCC
CCC	EEE
EEB	CBC
CCB	ECE