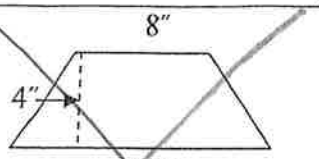
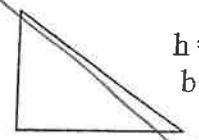
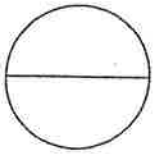
Summer Math Packet

2019-2020

8th Grade

Math Maintenance – Grade 7

Name _____ **Date** _____

$a = 1 \quad b = 2 \quad c = 0$ $a^2 - 2ab - c =$	**Evaluate each** $a = 3 \quad b = 6 \quad c = 5$ $2a + bc =$	**expression when:** $x = -2 \quad y = -1$ $x^2y =$	$x = 4 \quad y = 5 \quad z = 0$ $\frac{2(xz)^2}{y} =$
 A = _____ sq″	 h = 5 cm b = 8 cm A = _____ cm²	 h = 3 in b = 7 in A = _____ sq. in	 d = 10 ft A = _____ sq. ft
Translate into an algebraic expression or equation. A number is divided by 6, then increased by 14. The result is 21. What is the number?	The product of "k" and 4 decreased by 6 is less than eleven.	Twice Sara's weight minus 24 lbs is the same as Dave's weight of 120 pounds. How much does Sara weigh?	One hundred dollars less than twice last year's income
Name all the sets of numbers to which each of these numbers belongs -7	$-6\frac{5}{9}$	86	π
How many 3 digit numbers can be made using 6, 7, 8, and 9 if no digit is repeated?	Paper cups come in packages of 40 or 75. If 350 cups are needed how many of each package should be purchased?	If pepperoni, mushrooms, and/or green peppers can be added to a basic cheese pizza, how many different combinations could be made?	List all factors of 36.

Math Maintenance – Grade 7

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Name _____ **Date** _____

$y - {}^{-}8 = {}^{-}17$	**Solve for the variable.** $b + 38 = {}^{-}5$	$x - 20 = {}^{-}29$	${}^{-}7.25 = x - 6.346$
$16x - 5 = 59$	$4y + 9 = {}^{-}15$	$10 - 4x = {}^{-}30$	$4m + 12 = 48$
A number "t" increased by thirty-five is sixty.	**Translate into math symbols.** Five divided by the product of six and a number "b" is less than forty two.	Twenty less than a number "k" is thirty six.	Twice the sum of a number "x" and 6 is 20.
Multiply the opposite of $\frac{2}{3}$ by the reciprocal of ${}^{-}\frac{1}{12}$.	What is the difference when ${}^{-}16$ is subtracted from ${}^{-}50$?	$16\frac{5}{9}$ exceeds $6\frac{1}{6}$ by what number?	Find the difference when the product of ${}^{-}2$ and 6 is subtracted from ${}^{-}18$.
4^3 _____ 2^6 ${}^{-}4 \times {}^{-}4$ _____ $({}^{-}4)^2$	**Use >, <, =, or N to make true statements.** ${}^{-}7 \div 14$ _____ $14 \div {}^{-}7$ $\frac{1}{3}\%$ *of* 40 _____ 40% *of* $\frac{1}{3}$	$\frac{1}{18}$ _____ $\frac{1}{19}$ 375% _____ $3\frac{3}{4}$	**FREE**

NAME _____

Lesson 3.5 Problem Solving

SHOW YOUR WORK

Solve each problem by creating an inequality.

1. Blue Bird Taxi charges a $2.00 flat rate in addition to $0.55 per mile. Marcy only has $10 to spend on a taxi ride. What is the farthest she can ride without going over her limit?

   Let *d* equal the distance Marcy can travel.

   Inequality: _____

   Marcy can travel _____ miles without going over her limit.

1. _____

2. The school store is selling notebooks for $1.50 and T-shirts for $10.00 to raise money for the school. They have a goal of raising $250 to buy supplies for the science lab. If they have sold 60 notebooks, how many T-shirts will they need to sell to reach their goal?

   Let *t* equal the number of T-shirts.

   Inequality: _____

   They need to sell _____ T-shirts.

2. _____

3. There are 178 7th grade students and 20 chaperones going on the field trip to the aquarium. Each bus holds 42 people. How many buses will the group have to take?

   Let *b* represent the number of buses.

   Inequality: _____

   They will need to take _____ buses.

3. _____

4. Sofia's parents gave her an allowance for summer camp of $125. If she is going to be at camp for 6 weeks, what is the most she can spend each week while she is at camp?

   Let *m* represent the amount Sofia can spend each week.

   Inequality: _____

   The most Sofia can spend each week is _____.

4. _____

5. The cell phone company allows all users 450 text messages a month. Any text messages over the allowed amount are charged $0.25 per message. Craig only has $26 extra to spend on his cell phone bill. How many messages can he go over the allowed amount for the month without breaking his budget of $26?

   Let *p* represent the amount of text messages Craig can go over.

   Inequality: _____

   Craig can send and receive _____ extra text messages without breaking his budget of $26.

5. _____

NAME _____

Lesson 3.5 Using Variables to Express Inequalities

An **inequality** is a mathematical sentence that states that two expressions are not equal.
$2 \times 5 > 6$

Inequalities can be solved the same way as you solve equations.

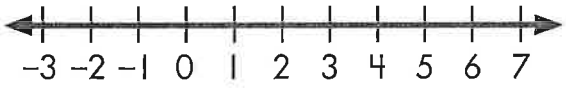
$-4 \times x \geq -4$
$-4 \times x \div (-4) \geq -4 \div (-4)$
$x \geq 1$

Solve each inequality and graph its solution.

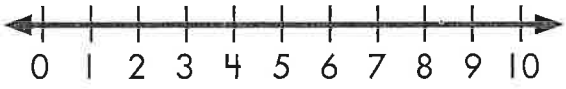
a

1. $-4 \times m > 20$

2. $15 \times x \leq 15$

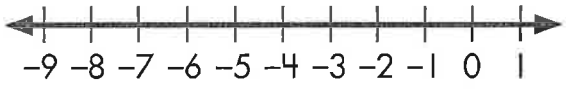


3. $-10a < -70$



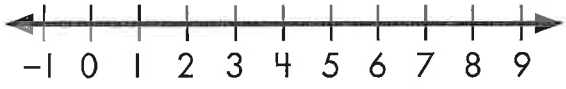
b

$\frac{v}{5} \leq -\frac{3}{5}$



$h \div 6 < -12$

$n \div 2 \geq 2$



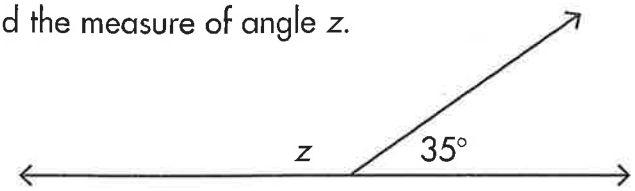
NAME _____

Lesson 5.8 Problem Solving

SHOW YOUR WORK

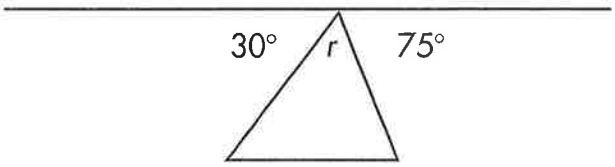
Use angle relationships to solve the problems.

1. Find the measure of angle *z*.



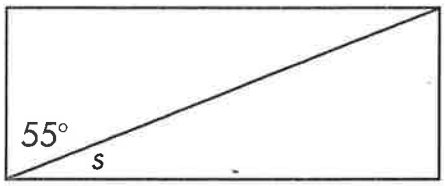
1.

2. Find the measure of angle *r*.



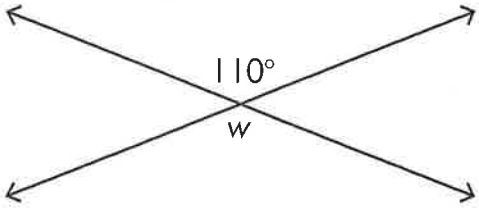
2.

3. Find the measure of angle *s*.



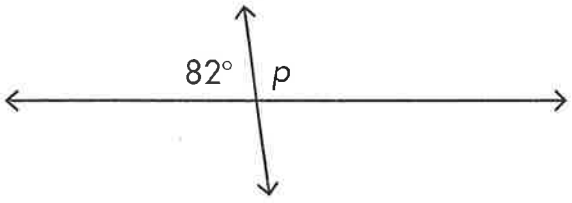
3.

4. Find the measure of angle *w*.



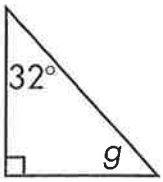
4.

5. Find the measure of angle *p*.



5.

6. Find the measure of angle *g*.



6.

NAME _____

Lesson 7.6 Understanding Compound Events

SHOW YOUR WORK

Use the Fundamental Counting Principle to find the number of possible outcomes. Show your work.

1. 3 coins are tossed and two six-sided dice are rolled. How many possible outcomes are there?

There are _____ possible outcomes.

1.

2. Jed is shopping. He is looking at 5 different ties, 3 different sweaters, and 4 different shirts. How many possible combinations can he make?

Jed can make _____ possible combinations.

2.

3. Miranda's jewelry box contains 8 necklaces, 10 pairs of earrings, and 4 bracelets. How many combinations, which contain all 3 kinds of jewelry, can she make?

Miranda can make _____ combinations of jewelry.

3.

4. Robert has to color in 4 different shapes (circle, square, triangle, and rectangle) and has 5 colors to choose from (green, yellow, red, blue, and orange). If he can only use each color one time, how many ways can he color the shapes?

Robert can color the shapes _____ different ways.

4.

5. Spencer needs to put on gloves, a hat, and a scarf. He has 5 hats, 4 pairs of gloves, and 9 scarves to choose from. How many combinations of gloves, hat, and scarf can Spencer make?

Spencer can make _____ combinations.

5.

6. Pilar wants to cook a meal that consists of a meat, a starch, and a vegetable. At the grocery store there are 8 choices of meat, 8 choices of vegetables, and 3 choices of starches. How many possible combinations can Pilar make?

Pilar can make _____ combinations.

6.

7. Jacob must collect a flower, a vegetable, and an herb. In the garden, there are 10 kinds of flowers, 7 kinds of vegetables, and 4 kinds of herbs. How many combinations can Jacob make?

Jacob can make _____ combinations.

7.

Name _____ Date _____

Finding the Percent One Number Is of Another

Solve. You may use either the proportion method or the equation method.

1. What percent of 55 is 22?

_____

2. What percent of 48 is 12?

_____

3. 17 is what percent of 50?

_____

4. 18 is what percent of 60?

_____

5. What percent of 50 is 34?

_____

6. What percent of 25 is 18?

_____

7. 15 is what percent of 75?

_____

8. 30 is what percent of 60?

_____

9. What percent of 45 is 25?

_____

10. What percent of 75 is 45?

_____

11. 30 is what percent of 120?

_____

12. 18 is what percent of 90?

_____

MIXED APPLICATIONS

13. Joe earned $2,400 this year. Last year he earned $1,800. This year's earnings were what percentage of last year's?

_____

14. Dolores bought 3 tapes that cost $4.95 each. The tax on her purchase was 6%. What was her total bill?

_____

MIXED REVIEW

Solve each equation. Check your solutions.

15. $x + 3.1 = 5$ _____

16. $0.9z = 10.8$ _____

17. $c - 0.34 = 2.19$ _____

18. $\frac{b}{0.05} = 5.3$ _____

Name _____ Date _____

Percent of Increase and Decrease

Find each percent of increase or decrease.

1. 2000 cost: $60
2001 cost: $80

_____

2. 1990 earnings: $30,000
2000 earnings: $45,000

_____

3. 2009 amount: 600
2011 amount: 360

_____

4. 2000 sales: 500
2010 sales: 1,000

_____

5. 2010 savings: $4,000
2011 savings: $1,500

_____

6. 1999 amount: 1,450
2001 amount: 1,305

_____

7. 2011 cost: $12,000
2012 cost: $16,000

_____

8. 2005 sales: 90
2010 sales: 72

_____

9. 2009 amount: 200
2010 amount: 230

_____

10. 1990 cost: $25.00
1991 cost: $25.50

_____

11. 2009 sales: 390
2011 sales: 273

_____

12. 2000 earnings: $1,580
2010 earnings: $1,738

_____

MIXED APPLICATIONS

13. Last year Cindy built a gymnastics set for $50. This year it cost her $75 to build one. What is the percent of increase?

_____

14. Last week an almanac cost $3.50. This week it is on sale for $2.80. What is the percent decrease?

_____

EVERYDAY MATH CONNECTION

Discount is the amount off the regular price of an item. Discount is often written as a percent of the regular price. The sale price is the difference between the regular price and the amount of discount.

The regular price of a car is $9,872. The car is on sale at a 15% discount.

15. What is the amount of discount?

_____

16. What is the sale price?

_____

Name _____ Date _____

Solving Problems with Equations and Inequalities

Solve.

1. Mary got $\frac{8}{10}$ of the questions right on her test. With what percentage increase could her score have been at least a 90?

_____

2. Joe's balance in his checking account at the beginning of the month was $132. At the end of the month, it was 15.3% higher. What was his balance at the end of the month?

_____

3. Diane is centering a $3\frac{1}{2}$-inch-long picture on a 12-inch-wide scrapbook page. How far from the side edges should she put the picture?

_____

4. The quarterback was sacked x yards from his own goal as the first quarter ended. He walked to the other end of the field and lined up on the other x yard line. He walked $41\frac{3}{4}$ yards between the two yard lines. How far from his end zone was he sacked? Hint: A football field is 100 yards long.

_____

5. Last year, Mr. Jones made $30,000. His boss just informed him that he will be receiving at least an 11.2% raise for this year. How much will he make this year?

_____

6. In March, a share of stock was worth $55. Six months later the value of the stock decreased by 7.2%. Find the final value of the stock.

_____

7. There were 348 students in the school last year. The school expects a 7.25% increase in enrollment this year. How many students are expected to be in the school this year?

_____

8. A company has 350 workers. The president of the company wants to know what percent increase in employment would be necessary for the number of workers to be greater than 375.

_____

NAME _____ DATE _____ PERIOD ____

8-3 Practice

Writing Two-Step Equations

Translate each sentence into an equation.

1. Three more than eight times a number is equal to 19.

2. Twelve less than seven times a number is 16.

3. Four more than twice a number is -10.

4. Nine less than five times a number is equal to -30.

5. **ART** Ishi bought a canvas and 8 tubes of paint for \$24.95. If the canvas cost \$6.95, how much did each tube of paint cost?

6. **ENGINEERING** The world's two highest dams are both in Tajikistan. The Rogun dam is 35 meters taller than the Nurek dam. Together they are 635 meters tall. Find the height of the Nurek dam.

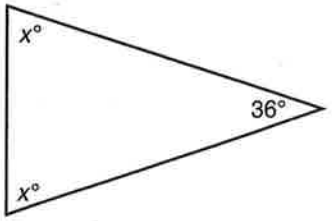
U.S. PRESIDENTS For Exercises 7 and 8, use the information at the right.

President	Age at First Inauguration
J. Carter	52
R. Reagan	69
G. H. W. Bush	
W. Clinton	46
G. W. Bush	54

7. If you double President Reagan's age at the time of his first inauguration and subtract his age at the time he died, the result is 45 years. How old was President Reagan when he died?

8. If you divide the age of the first President Bush when he was inaugurated by 2 and add 14 years, you get the age of President Clinton when he was first inaugurated. How old was President G. H. W. Bush when he was inaugurated?

9. **GEOMETRY** Find the value of x in the triangle at the right.



10. **ALGEBRA** Three consecutive integers can be represented by n, $n + 1$, and $n + 2$. If the sum of three consecutive integers is 57, what are the integers?

NAME _____ DATE _____ PERIOD _____

8-3 Word Problem Practice

Writing Two-Step Equations

Solve each problem by writing and solving an equation.

1. CONSTRUCTION Carlos is building a screen door. The height of the door is 1 foot more than twice its width. What is the width of the door if it is 7 feet high?	**2. GEOMETRY** A rectangle has a width of 6 inches and a perimeter of 26 inches. What is the length of the rectangle?
3. EXERCISE Ella swims four times a week at her club's pool. She swims the same number of laps on Monday, Wednesday, and Friday, and 15 laps on Saturday. She swims a total of 51 laps each week. How many laps does she swim on Monday?	**4. SHOPPING** While at the music store, Drew bought 5 CDs, all at the same price. The tax on his purchase was \$6, and the total was \$61. What was the price of each CD?
5. STUDYING Over the weekend, Koko spent 2 hours on an assignment, and she spent equal amounts of time studying for 4 exams for a total of 16 hours. How much time did she spend studying for each exam?	**6. FOOD** At the market, Meyer buys a bunch of bananas for \$0.35 per pound and a frozen pizza for \$4.99. The total for his purchase was \$6.04, without tax. How many pounds of bananas did Meyer buy?
7. HOME IMPROVEMENT Laura is making a patio in her backyard using paving stones. She buys 44 paving stones and a flowerpot worth \$7 for a total of \$73. How much did each paving stone cost?	**8. TAXI** A taxi service charges you \$1.50 plus \$0.60 per minute for a trip to the airport. The distance to the airport is 10 miles, and the total charge is \$13.50. How many minutes did the ride to the airport take?

NAME _____ DATE _____ PERIOD ____

6-1 Word Problem Practice

Ratios

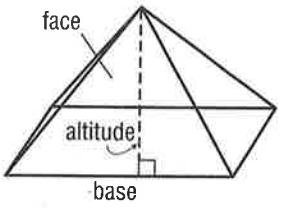
1. ELECTIONS In an election for sheriff, 210 people voted. If there were 1,260 possible voters, write a ratio to compare the number of people who voted to the number of possible voters.	**2. DENTAL CARE** Taru surveyed 60 dentists and found that 48 favored the use of fluoride toothpaste. Write a ratio to compare the number of dentists favoring the use of a flouride toothpaste to all dentists surveyed.
3. E-MAIL One morning, Mirna counted 15 junk e-mails out of 21 e-mails in her inbox. Write a ratio comparing the number of junk e-mails to the total number of e-mails.	**4. SURFING** One evening at his local surf spot, Jeff counted 28 surfers in the water. Among those, he counted 21 that had hoods on their wetsuits. Write a ratio comparing the number of surfers with hoods to the total number of surfers.
5. MUSIC A music company signed 12 new artists to its label in 2002. Out of the 12, 10 artists have hit songs. Write a ratio to compare the number of artists with hit songs to the total number of artists signed in 2002.	**6. BASEBALL** Nate had 26 hits at 50 times at bat last season. Write a ratio to compare the number of hits to the number of times at bat.
7. BASEBALL In baseball, David has 10 hits out of 14 at bats. Adam has 15 hits out of 21 at bats. For each player, write a ratio that represents his total number of hits out of times at bat. Are these ratios equivalent?	**8. DRIVING** Sarah can drive 198 miles on 11 gallons of gasoline. On 6 gallons of gasoline, Rachel can travel 138 miles. Write a ratio that compares miles traveled per gallon of gasoline for each car. Do the cars get the same mileage?

NAME _____ DATE _____ PERIOD ____

6-1 Enrichment

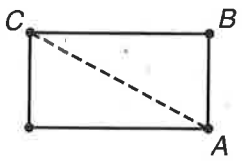
Golden Ratio

The Great Pyramid at Giza utilizes a special ratio between the altitude of a triangular face and one-half the length of the base. This ratio is known as the **Golden Ratio** and has been used repeatedly by artists and architects over the centuries. It is thought to be particularly pleasing to the human eye.



The line segment and rectangle are drawn to illustrate the relationship of the Golden Ratio.

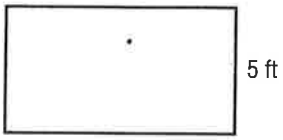
$$\frac{BC}{AB} = \frac{AC}{BC} \approx 1.618$$



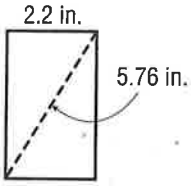
Exercises

Determine whether each rectangle demonstrates the Golden Ratio.

1.



2.



The Fibonacci Sequence, shown below, is related to the Golden Ratio.

0, 1, 1, 2, 3, 5, 8, 13, 21, ...

The ratio of a number to the previous number approximates the golden ratio. The greater the numbers in the sequence, the closer the approximation is to the golden ratio.

For Exercises 3–6, use the Golden Ratio to determine numbers in the Fibonacci Sequence. Round each number to the nearest whole number.

3. What will the next five numbers be in the sequence?

4. What will the next number be after 610?

5. What will the next number be after 2,584?

6. What will the next number be after 6,765?

NAME _____ DATE _____ PERIOD ____

7-7 Practice

Sales Tax and Discount

Find the total cost or sale price to the nearest cent.

1. \$18 haircut; 10% discount **2.** \$299 lawn mower; 5% tax **3.** \$9.99 meal; 25% discount

4. \$149 guitar; 20% discount

5. \$15.75 music CD; 4% tax

6. \$24 gym bag; 8% tax

7. \$32.88 jacket; 50% discount

8. \$3.45 coffee; 33% discount

9. \$9.99 chair; $8\frac{1}{2}$% tax

Find the percent of discount to the nearest percent.

10. bracelet: regular price, \$23
sale price, \$13.80

11. bicycle: regular price, \$119
sale price, \$79

12. **TICKETS** State residents get discounts at various theme parks throughout the state. One theme park charges a state resident \$51.70 for a \$58.75 regular adult admission ticket. What is the percent discount?

13. **TRUCKS** What is the sales tax on a \$17,500 truck if the tax rate is 6%?

COMPUTERS **For Exercises 14–16, use the following information.**

Lionel is buying a computer that normally sells for \$890. The state sales tax is 6%.

14. What is the total cost of the computer including tax?

15. If the computer is on sale with a 10% discount, what is the sale price of the computer before adding the sales tax?

16. What is the sales tax on the discounted price?

NAME _____ DATE _____ PERIOD ____

7-7 Word Problem Practice

Sales Tax and Discount

1. SKATEBOARDS Ines wants to buy a skateboard but she does not know if she has enough money. The price of the skateboard is \$85 and the sales tax is 6%. What will be the total cost of the skateboard?	**2. PRETZELS** The Spanish club sold hot pretzels as a fund-raiser. The pretzels normally sold for \$1.50, but near the end of the sale they wanted to sell as many as possible, so they reduced the price by 30%. What was the new price for a hot pretzel?
3. COMPUTERS Andrea ordered a computer on the Internet. The computer cost \$1,499 plus $7\frac{1}{2}\%$ sales tax. What was the total amount Andrea paid for her computer?	**4. BOOKS** Nate went shopping at a bookstore. The price of the book he selected was \$14.95, but it had a sale sticker on it. When he paid for the book, he was charged \$12.71 before sales tax was added. What was the percent of discount to the nearest percent?
5. CELL PHONES Justin is buying a cell phone that has a regular price of \$149. The cell phone is on sale for 15% off the regular price. What will be the sale price?	**6. MAGAZINES** Ivan bought two magazines for \$4.95 each. If the sales tax was 6.75%, what was the total amount that he paid for the magazines?
7. MOVIES A video store is having a sale in which DVDs are on sale for 20% off. During this sale, what is the cost of three DVDs that regularly cost \$16.99?	**8. MODELS** The original price of a collectible model airplane is \$115. The discounted price is \$99. What is the percent of discount to the nearest percent?

NAME _____ DATE _____ PERIOD ____

12-3 Practice

Solving Addition Equations

Solve each equation. Use models if necessary. Check your solution.

1. $9 + d = -5$

2. $b + 2 = 6$

3. $x + (-4) = 1$

4. $-2 + j = -9$

5. $m + (-4) = 9$

6. $1 = f + (-7)$

7. $6 + c = 3$

8. $8 + y = -9$

9. $3 + h = -6$

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

11. $\frac{1}{4} + a = \frac{3}{4}$

12. $-\frac{3}{8} + g = \frac{2}{8}$

13. ALGEBRA What is the value of n if $7 + n = 5$?

THOROUGHBREDS The table shows the earnings of some of the leading horses at Northlands Park. Use the table to answer Exercises 14 and 15.

14. Sparhawk has earned \$8,329 more than Silver Sky. Write and solve an equation to find Silver Sky's earnings.

Horse Earnings at Northlands Park	
Horse	**Earnings**
Sparhawk	\$52,800
Griffin's Web	\$43,757
Kaylee's Magic	\$121,113
Eternal Secrecy	\$57,532
Silver Sky	
Huntley's Creek	

15. Write and solve an equation to find Huntley's Creek's earnings if the total earnings for all the horses is \$354,386.

Lesson 12–3

NAME _____ DATE _____ PERIOD ____

12-3 Word Problem Practice

Solving Addition Equations

1. **BIRTHDAYS** Alberto's birthday is 7 days after Corey's birthday. Alberto's birthday is on the 9th. Write and solve an equation to find the day of Corey's birthday.	2. **AGE** Jason and Megan are brother and sister. Jason is 4 years older than Megan. If Jason is 16 years old, write and solve an equation to find Megan's age.
3. **PAPER AIRPLANES** Rebecca and Ricardo are both testing their paper airplanes. Rebecca's plane flew 6 feet farther than Ricardo's plane. If Rebecca's plane flew 10 feet, write and solve an equation to find how far Ricardo's plane flew.	4. **BASEBALL CARDS** Ren and Chet have just started collecting baseball cards. Ren has 13 more baseball cards than Chet. Ren has 27 cards. Write and solve an equation to find how many baseball cards Chet has.
5. **SKATING** Susan and Ruby went skating. Ruby skated 30 minutes longer than Susan. If Ruby skated for 45 minutes, write and solve an equation to find how long Susan skated.	6. **STUNT FLYER** A stunt airplane is flying at 150 feet. It ascends to 325 feet. Write and solve an equation to find the change in altitude of the airplane.
7. **SAVINGS** Oscar is saving money to buy a jacket that costs $47. He has already saved $25. Write and solve an equation to find how much more money Oscar needs to save.	8. **RECYCLING** Bonnie has 27 more cans than Jackie. If she has 56 cans, write and solve an equation to find how many cans Jackie has.