Foundations of Math Summer Math Packet

Hello Families,

This is a packet of some specifically chosen math review topics for your child to review over the summer. This will help them keep math fresh in their mind over summer break as well as solidifying some important topics from their math class this past year. I will be emailing out the answer keys to you before the end of school if you want to be able to check your student's answers.

If students complete this packet over the summer and return it to me in the fall, they will receive extra credit for quarter 1!

In addition to this summer math packet students can also work on Khan Academy. This is a website with grade level-based lesson videos and practice problems. Students are very familiar with this as we use it everyday of the school year. This website also connects with their MAP tests so they are working on skills that will help increase their comprehension, math skills, and overall understanding.

Thanks for your partnership over this year and have a wonderful rest of the school year and summer!

Please reach out if you have any questions!

Mrs. Dumire

Name _____

Reteach to Build Understanding

You **annex** one or more zeros in the following addition or subtraction problems.

| 1.45 0 | 27,779.7 00 | 4.1111 |
|----------------|--------------------|------------------|
| <u>+ 3.589</u> | <u> </u> | + 0.6 000 |

Place value is important when multiplying decimals.

| $4.76 \cdot 2.6 = \frac{476}{100} \cdot \frac{26}{10}$ | 4.76 —— Number of decimal places: 2 |
|--|---|
| 100 10 | \times 2.6 \leftarrow Number of decimal places: 1 |
| $=\frac{12,376}{1,222}$ | 2856 |
| 1,000 | + 9520 |
| | 12.376 - Number of decimal places: $2 + 1 = 3$ |

1. It rained 1.8 inches on Tuesday and 0.24 inch on Wednesday. How many inches did it rain altogether?



It rained inches altogether.

2. The chef at a restaurant made enough sauce for 20.5 servings.
The sauce is served in small cups that hold 3.275 ounces each.
How many ounces of sauce did the chef make?3.275
 \times 20.5

Multiply the decimals as if they were whole numbers.

How many decimal places are in the product?

How many ounces of sauce did the chef make?

On the Back!

3. Place the decimal point in the difference and in the product.

15.25 - 7.14 = 811 $3.4 \times 2.1 = 714$



Division answers two types of questions:

- How many equal-sized groups will there be?
- How many items will be in each equal-sized group?

A **remainder** is the whole number that is left after dividing. To divide decimals, multiply the divisor by a power of 10 so that it is a whole number. Multiply the dividend by the same power of 10. Then divide as you would for whole numbers. The decimal point for the quotient goes directly above the decimal point for the dividend.

ひゃく トレンガンびん いちょうちょう ひゃうかん ひゃう マン・マン・アン・マン

- 1. A charity takes donations to purchase livestock for struggling farms. The table shows the prices of some of the animals available. A sixth-grade class raised \$2,758 for the charity.
 - **a.** Write the missing numbers in the division using the standard algorithm at the right.
 - **b.** The class can buy rabbits and have \$
- 2. Hyo spent \$48.84 for a brisket that costs \$3.70 per pound. How much did the brisket weigh?
 - **a.** Write an expression to solve this problem.
 - **b.** What is the lowest power of 10 by which you can multiply

the divisor and the dividend to get a whole-number divisor?

- **c.** Divide 488.4 by 37.
- d. So, Hyo bought a -pound brisket.

On the Back!

3. Find the quotient. $0.9\overline{)4.68}$

| | | • | |
|-----|------|----|--|
| | | ٩. | |
| : 銜 | e, | 闙 | |
| | di k | đ. | |
| | | | |

| Animal | Price |
|-----------------|-------|
| Flock of chicks | \$22 |
| Flock of ducks | \$24 |
| Honeybees | \$31 |
| Rabbit | \$63 |

left over.







- 1. Layla has $8\frac{3}{4}$ bags of packing peanuts. Each whole bag of packing peanuts weighs $7\frac{4}{5}$ pounds. What is the total weight of the packing peanuts?
 - a. Use an area model to find the partial products.



b. Add the partial products.

$$56 + 5\frac{1}{4} + \frac{2}{5} + \frac{3}{5} = 56 + 5\frac{5}{5} + 6\frac{8}{6} + \frac{12}{12} = 0$$

c. The packing peanuts weigh

pounds.

2. Ian has $\frac{5}{6}$ pound of pistachios. He needs $\frac{2}{7}$ of the pistachios to make trail mix. What fraction of a pound of pistachios will lan use for the trail mix?

Find the product. Is it reasonable?

 $\frac{2}{7} \times \frac{5}{6} = --$ Yes/No, because --- is less than/greater than 1.

On the Back!

3. Find the product of $8\frac{1}{7} \times 3\frac{2}{3}$.



In $6 \div \frac{2}{3}$, 6 is the dividend and $\frac{2}{3}$ is the divisor. In $\frac{2}{3} \div 6$, $\frac{2}{3}$ is the dividend and 6 is the divisor. Two numbers are **reciprocals** if their product is 1. The reciprocal of a number written as a fraction $\frac{a}{b}$ is the fraction $\frac{b}{a}$. The reciprocal of $\frac{2}{3}$ is $\frac{3}{2}$. The reciprocal of 6 is $\frac{1}{6}$. The quotient of $6 \div \frac{2}{3}$ can be found by multiplying 6 by the reciprocal of $\frac{2}{3}$. $6 \div \frac{2}{3} = 6 \times \frac{3}{2} = \frac{6}{1} \times \frac{3}{2} = \frac{18}{2} = 9$ The quotient of $\frac{2}{3} \div 6$ can be found by multiplying $\frac{2}{3}$ by the reciprocal of 6. $\frac{2}{3} \div 6 = \frac{2}{3} \times \frac{1}{6} = \frac{2}{18} = \frac{1}{9}$

1. To divide $\frac{2}{3} \div 5$, first shade the diagram to represent the dividend.

- **2.** Divide the diagram into 5 equal parts.
- **3.** Circle the shaded parts of one row to find the quotient. $\frac{2}{3} \div 5 =$
- **4.** Write $13 \div \frac{4}{7}$ as a multiplication expression. $\longrightarrow \times \frac{1}{7}$
- 5. Multiply the numerators. Then multiply the denominators. =
- **6.** Write the quotient as a mixed number. =

On the Back!

7. Write the division sentence that the model represents.





To divide fractions, you multiply the dividend by the reciprocal of the divisor. $\frac{2}{3} \div \frac{1}{4} = \frac{2}{3} \times \frac{4}{1} = \frac{8}{3}$

A **quotient** is the result of a division problem. In the division problem $\frac{2}{3} \div \frac{1}{4} = \frac{8}{3}$, the quotient is $\frac{8}{3}$. This quotient can be renamed as a mixed number, $2\frac{2}{3}$.

If the divisor is greater than 1, the quotient is less than the dividend.

PERMIT

If the divisor is between 0 and 1, the quotient is greater than the dividend.

1. Laurel has $\frac{5}{6}$ cup of rice. She wants to separate the rice into $\frac{1}{3}$ -cup servings. How many servings can Laurel make?

Write a division expression that can be used to solve the problem.

- **2.** The reciprocal of $\frac{1}{3}$ is .
- 3. Write the division expression as a multiplication expression. $\underline{\qquad}$ \times $\underline{\qquad}$
- **4.** Multiply and rename the answer as a mixed number.
- **5.** Laurel can make servings of rice.

6. Suppose Laurel wanted to make $\frac{1}{4}$ -cup servings instead. How many servings of rice could she make?

On the Back!

7. Find the quotient.

$$\frac{4}{9} \div \frac{6}{7}$$



Name _____

Two numbers that are located on opposite sides of 0 on a number line and are the same distance from 0 are **opposites**.

On the number line above, -4 and 4 are on opposite sides of 0. Each is 4 units from 0, so they are opposites.

The counting numbers, their opposites, and 0 are **integers**. 15 is an integer because it is a counting number. -15 is an integer because it is the opposite of the counting number 15. -(-15) = 15

1. The numbers 4, -7, and 0 are integers. The numbers 4.5 and $\frac{1}{2}$ are not integers. Circle the integers.

-2.5 0 -9 $\frac{3}{4}$ 16 -4.8

2. Which integer is neither positive nor negative?

What is the opposite of this integer?

- **3.** Complete 3a–3d to find the opposite of 9.
 - **a.** On a number line, the positive integers are located to the of 0.

The negative integers are located to the of 0.

- **b.** Plot 9 on the number line to the right of 0.
- c. Plot the opposite of 9 to the left of 0 so that it is 9 units from 0.

| - | 1 | | 1 | 1 | 1 | 1 | 1 | | 1 | | 1 | 1 | 1 | 1 | 1 | | 1 | I | 1 | 1 | 1 . |
|-----|-----|----|---|----|----|----|---|---|---|---|-----|---|---|---|-----|-----|-----------|-----|---|---|-----|
| | 1. | | 1 | l | | | | | | | | | | 1 | 1 | 1 | 1 | l | I | 1 | 1 |
| -10 | 1-9 | -8 | 7 | -6 | -5 | -4 | 3 | 2 | 1 | (|) . | 1 | 2 | 3 | 4 ! | 5 (| <u> 6</u> | 7 8 | 8 | 9 | 10 |

d. The opposite of 9 is

On the Back!

4. Draw a number line from -5 to 5. Label -3 as point *P*. Then write the opposite of -3.

Reteach to Build Understanding **2-4**

A **coordinate plane** is formed by the intersection of two number lines called the *x*-axis and *y*-axis. The coordinate plane is divided into four **quadrants**.

An **ordered pair** is a pair of numbers used to locate a point on a coordinate plane. The first number of the pair is the *x*-coordinate, and the second number is the *y*-coordinate.

The ordered pair for the point on the coordinate plane on the right is (2, -1).

The intersection of the axes is at 0 on both number lines and is called the **origin**.

The origin is located at the ordered pair (0, 0).

- 1. The coordinate plane shows the locations of several places in a city. To find the coordinates of the library, start at the
- 2. The library is 0.75 unit to the left of the origin, so the *x*-coordinate is
- **3.** The library is unit(s) up from the *x*-axis, so the *y*-coordinate is
- 4. The coordinates of the library are(,).
- 5. Write the *x*-coordinate of the library as a fraction.
- 6. Write the *y*-coordinate of the library as a fraction.
- 7. The coordinates of the library, written as fractions, are (

On the Back!

8. What are the coordinates of the middle school?







).

Reteach to Build Understanding **2-6**

10

8

The **perimeter** of a polygon is the distance around its edges. To find the perimeter, add all the side lengths.

The perimeter of the triangle is: 6 + 8 + 10 = 24 units

The coordinate plane shows the layout of some buildings and a parking lot.

- 1. What distance does each unit of the grid represent?
- **2.** The coordinates of the corners of the parking lot, starting from the top left and going clockwise, are:

| (| | | , 50), (50, |), | |
|---|---|---|---------------|----|---|
| (| , | , | , —20), (—80, | |) |

3. Find the length of each side of the parking lot, in meters.

 Top: |-80| + | | = +50 = m

 Bottom: | | + |50| = 80 + = m

 Left: |50| + | | + |-20| = 50 + = m

 Right: | | + |-20| = 50 + = m

4. Add the side lengths to find the perimeter.

m + 130 m + m + 70 m = m

The perimeter of the parking lot is meters.

On the Back!

5. What is the perimeter of Building 1?



6



Name _____

Reteach to Build Understanding **3-2**



On the Back!

4. Find the prime factorization of 18. If it is prime, write prime.

The order of operations is a set of rules to follow when evaluating expressions.

Order of Operations

- (1) Evaluate expressions in parentheses and brackets from the inside out.
- (2) Evaluate powers.
- (3) Multiply and divide from left to right.
- (4) Add and subtract from left to right.

To evaluate the expression $(21 - 3) \div 6 + 9^2$:

| $18 \div 6 + 9^2$ | Evaluate inside the parentheses. |
|--------------------|----------------------------------|
| $= 18 \div 6 + 81$ | Evaluate the power. |
| = 3 + 81 | Divide. |
| = 84 | Add. |

1. Fill in the blanks to explain the order in which you would perform the operations when evaluating the following expression. The first one has been done for you.

 $6^2 + [(59 - 4) \div 11] \times 2$

- (1) Evaluate the expression inside the parentheses by subtracting.
- (2)
- (3)
- (4)
- (5)
- **2.** Evaluate the expression $6^2 + [(59 4) \div 11] \times 2$ by following the steps you wrote.
- 3. Insert grouping symbols in the expression so that it has a value of 2.

$$14 - 2^2 \div 5 = 2$$

On the Back!

4. Use the order of operations to evaluate the expression $(11^2 - 21) \times (\frac{1}{2})^2 + 5$. Show your work.



Reteach to Build Understanding **3-5**

Use **substitution** to evaluate an algebraic expression. Replace the variable with a number. Evaluate the expression 3a + 4 when a = 2.

- 3a + 4 $= 3(2) + 4 \qquad \leftarrow \text{Substitute 2 for } a.$ $= 6 + 4 \qquad \leftarrow \text{Multiply.}$ $= 10 \qquad \leftarrow \text{Add.}$
- **1.** Evaluate the expression $m^2 2n + \frac{2}{3}p$ when m = 4, n = 2, and p = 6.

| $m^2 - 2n + \frac{2}{3}p$ | |
|---|---|
| $= ($ $)^2 - 2($ $) + \frac{2}{3}($ $)$ | $\leftarrow \frac{\text{Substitute the values}}{\text{for each variable.}}$ |
| $= -2() + \frac{2}{3}()$ | \leftarrow Evaluate the power. |
| $=$ $+\frac{2}{3}()$ | \leftarrow Multiply. |
| + | ← Multiply. |
| = , + | \leftarrow Subtract. |
| = | ← Add. |

- **2.** Evaluate 13.2*a* for *a* = 7.1.
- **3.** Use the order of operations to evaluate the expression $6y^2 + 3y \frac{1}{4}$ for $y = \frac{1}{8}$.

The value of the expression is

4. Evaluate the expression $\frac{1,584 + 144x}{4}$ for x = 16.

The value of the expression is

On the Back!

5. The formula to find the perimeter of a rectangle is $P = 2\ell + 2w$, where ℓ is the length and w is the width of the rectangle. Use the formula to find the perimeter of rectangle *ABDC*.





Name ____

The **Addition Property of Equality** states that when you add the same amount to both sides of an equation, the two sides of the equation stay equal.

22 - 7 = 15, so (22 - 7) + 10 = 15 + 10.

The **Subtraction Property of Equality** states that when you subtract the same amount from both sides of an equation, the two sides of the equation stay equal.

25 + 12 = 37, so (25 + 12) - 9 = 37 - 9.

The **Multiplication Property of Equality** states that when you multiply both sides of an equation by the same amount, the two sides of the equation stay equal.

18 - 4 = 14, so $(18 - 4) \times 3 = 14 \times 3$.

The **Division Property of Equality** states that when you divide both sides of an equation by the same nonzero amount, the two sides of the equation stay equal.

8 + 6 = 14, so $(8 + 6) \div 7 = 14 \div 7$.

Complete the statements. Tell which property of equality was used.

- **1.** If $\frac{y}{8} = 4$, then $\frac{y}{8} \times 8 = 4 \times 1$
- **2.** If 4 + x = 34, then 4 + x 4 = 34 4
- **3.** If 3.5m = 14, then $3.5m \div 3.5 = 14 \div$
- **4.** If g 6 = 10, then g 6 + 6 = 10 + 6

On the Back!

5. Tell which property of equality was used.

$$6z = 90$$
$$6z \div 6 = 90 \div 6$$



Reteach to Build Name Understanding 4 - 3Operations that undo each other, like addition and subtraction, have an inverse relationship. To solve an equation, use inverse operations. If a number is added to the variable, subtract it from both sides. If a number is subtracted from the variable, add it to both sides. 1. What operation is being used in the equation? x + 15 = 22x + 15 - 22 - 32**2.** What operation has an inverse relationship to the operation identified in Exercise 1? $\mathbf{x} = \mathbf{x}$ **3.** To solve the equation, subtract from both sides of the equation. y - 11 = 20**4.** What operation is being used in the equation? . ****** y - 11 + = 20 +5. What operation has an inverse relationship to the operation identified in Exercise 4? y =

6. To solve the equation, add to both sides of the equation.

On the Back!

7. Write an equation to represent the balance shown below and solve for the variable.



| me | - Reteach to Build Understanding 4-3 |
|--|---|
| perations that <i>undo</i> each other, like addition and subtraction verse relationship . | n, have an |
| solve an equation, use inverse operations. If a number is added to the variable, subtract it from both s If a number is subtracted from the variable, add it to both s | sides. sides. |
| What operation is being used in the equation? | <i>x</i> + 15 = 22 |
| What operation has an inverse relationship to the operation identified in Exercise 1? | $x + 15 - \frac{1}{2} = 22 - \frac{1}{2}$ |
| To solve the equation, subtract from both sides of t | he equation. |
| What operation is being used in the equation? | y - 11 = 20 |
| What operation has an inverse relationship to the operation identified in Exercise 4? | y - 11 + z = 20 + y |
| | me |

- On the Back!
 - 7. Write an equation to represent the balance shown below and solve for the variable.

6. To solve the equation, add to both sides of the equation.



200000000

Reteach to Build Understanding **4-5**

You can use inverse relationships of operations and the properties of equality to solve equations with rational numbers.

Property of

1. To solve $3\frac{3}{4} + r = 5\frac{3}{8}$, use the Equality.

$$3\frac{3}{4} + r = 5\frac{3}{8}$$
$$3\frac{3}{4} + r - 3\frac{3}{4} = 5\frac{3}{8} - r$$
$$r =$$

 A water cooler contained 5.2 liters of water. Some water was added until the cooler contained 22.1 liters of water. How many times as much water is there in the cooler now?

There is times as much water now.

- **3.** Emiyo has used $2\frac{1}{4}$ gallons of paint. This is $\frac{2}{3}$ of the total amount of paint. How much paint, *p*, did Emiyo have to start?
 - a. Write an equation to describe the situation.
 - **b.** Rename the mixed number in the equation as a fraction.
 - c. Use inverse operations and multiply by the reciprocal of $\frac{2}{3}$ to solve.
 - **d.** Emiyo started with gallons of paint.

On the Back!

4. Solve the equation $p \div 8.2 = 9.3$ and check your solution.

5.2x = 22.1

| 5.2 <i>x</i> - | ÷., | , ,,,, , ,, | = 22.1 | ÷ 5.2 |
|----------------|-----|-----------------|--------|-------|
| | | | | |

 $\frac{\frac{2}{3}p = \frac{9}{4}}{\frac{2}{2} \times \frac{2}{3}p = \frac{9}{4} \times \frac{3}{\frac{3}{4}}}$ $p = \frac{9}{8}$ $p = 3 - \frac{1}{8}$

A **solution of an inequality** is a value for the variable that makes the inequality true. A number line can be used to show the solutions of an inequality.



An inequality can have **infinitely many**, or an unlimited number, of solutions. For the inequality x < 2, every number that is less than 2 is a solution. The numbers 0, 1, -5, and -20 are four examples of the unlimited number of solutions.

1. Write "is" or "is not" in each blank to explain whether the number is a solution to the inequality d > -2.

3 a solution because 3 greater than -2.

-2 , a solution because -2 , greater than -2.

2. Circle the correct term and fill in each blank to complete the steps to graph the solutions of the inequality d > -2. Draw the graph.

Step 1 Draw a(n) open/closed circle at

Step 2 Because d > -2, shade all the values to the left/right of -2.

Step 3 Draw an arrow on the number line to show that the solutions go on forever.

-5 -4 -3 -2 -1 0 1 2 3 4 5

3. Circle the correct term and fill in each blank to complete the steps to graph the solutions of the inequality $y \le 3$. Draw the graph.

Step 1 Draw a(n) open/closed circle at

Step 2 Because $y \le 3$, shade all the values to the left/right of 3.

Step 3 Draw an arrow on the number line to show that the solutions go on forever.

On the Back!

4. Write the inequality that the graph represents.



A **dependent variable** is a variable whose value changes in response to another variable.

The number of eggs, *g*, produced by a farm depends on the number of chickens, *c*, on the farm.

The variable *g* represents the dependent variable because the number of eggs produced depends on the number of chickens on the farm.

An **independent variable** is a variable that causes the value of the dependent variable to change.

The amount of money, *m*, collected by selling popcorn depends on the number of bags of popcorn, *p*, sold.

The variable *p* represents the independent variable because the number of bags of popcorn sold causes the amount of money collected to change.

1. A restaurant is offering an omelet special for Sunday brunch. The chef can make a number of omelets, *m*, for brunch. There are a number of eggs, *g*, in the restaurant's refrigerator.

The number ofdepends on the number ofIdentify each variable: independent variable; dependent variable

2. Jacob earns \$5 every time his online ad is viewed, *v*. He earns *d* dollars from his ad.

The number of depends on the number of

Identify each variable: independent variable ; dependent variable

3. Write your own situation in which the number of tennis players, *p*, is an independent variable.

On the Back!

4. Underline the independent variable and circle the dependent variable for the following situation: A book has a number of pages, *p*. It takes Caroline a number of hours, *h*, to read the book.





Use a table, a graph, or an equation to show the relationship between dependent and independent variables in a problem situation.

A store sells a toy car for \$1 less than twice what it costs to make the car.

1. Make a table to relate the selling price, *s*, to the cost of making the car, *c*. Then graph the ordered pairs on the coordinate plane.

| с | 5 |
|---|---|
| 1 | 1 |
| 2 | |
| 3 | |

2. Write an equation that describes the relationship.

selling price = 2 times the cost minus \$1

s = -

3. What is the selling price of a toy car that costs \$4 to make?

On the Back!

4. Walter pays \$4 for each gallon, *g*, of gas for his lawn mower. He uses a gift card worth \$5 to reduce the amount he owes for his purchase. How much money, *m*, will Walter owe if he buys 4 gallons of gas? Make a table using 2, 3, and 4 as values for *g*. Graph the ordered pairs, and then write an equation to solve the problem.







Two numbers are **equivalent** if they have the same value. Ratios are equivalent when they show the same relationship.

The table shows equivalent ratios. Each term of the ratio can be multiplied or divided by the same number to find equivalent ratios.

| | K | × 3- < 2 | × 4- | \sum |
|----------------------|---|-------------|------|--------|
| Number of Petals | 5 | 10 | 15 | 20 |
| Number of Flowers | 1 | 2 | 3 | 4 |

Bruno correctly answered 4 questions out of every 5 questions on a test.

1. Write the ratio of questions that Bruno answered correctly to the

number of questions on the test.

2. Make a table with equivalent ratios to find the number of questions that Bruno answered correctly if there were 45 questions on the test.



3. If there were 45 questions on the test, then Bruno answered questions correctly.

On the Back!

4. Write three ratios that are equivalent to $\frac{6}{9}$.



Dimensional analysis is a way to use conversion factors to convert one unit of measure to another unit of measure. A **conversion factor** is a rate that compares equivalent measures.

Here are some examples of conversion factors in the customary system.

| 12 inches | 1 pound | 4 quarts |
|-----------|-----------|----------|
| 1 foot | 16 ounces | 1 gallon |

- 1. The length of a football field, including the two end zones, is 120 yards. How long is the football field in feet?
 - **a.** Write the conversion factors that relate yards and feet.



b. What are the desired units?

What are the original units?

Circle the conversion factor above that has the desired units in the numerator and the original units in the denominator.

c. Multiply the given length by the conversion factor. Write in units where necessary, and cross out units when they divide out.

120
$$\times \frac{ft}{yd} = 120 \times = ft$$

The length of the football field is feet.

2. Kelsey put 6 gallons of water in the cooler. How many 1-pint water bottles can be filled from the water in the cooler?

 $6 \text{ gal} imes rac{ ext{qt}}{ ext{1 gal}} imes rac{ ext{pt}}{ ext{1 qt}} = ext{pt}$

On the Back!

3. A female robin weighs 4 ounces. How much does the robin weigh in pounds?



A **percent** is a rate in which the first term is compared to 100. The 100 represents 1 whole. The first term tells what part of 100 a quantity is. The word *percent* means "for each 100."

 $\frac{41}{100} = 41\% \qquad 18\% = \frac{18}{100} \qquad \frac{99}{100} = 99\% \qquad 31\% = \frac{31}{100}$

1. In a survey of 5 people, 3 said they prefer bananas over apples.

The number line shows the number of people surveyed. Draw a point on the number line to show the number of people who preferred bananas.

2. Complete the number line to 100 by labeling the tick marks between 0 and 100. Draw a point at the same position that you did on the number line above.





- 3. What percent of the people in the survey preferred bananas?
- **4.** The circle below has parts, and parts are shaded.



- 5. What fraction represents the shaded part of the diagram?
- 6. Write an equivalent fraction with a denominator of 100.
- 7. What percent of the diagram is shaded?

On the Back!

8. Write the percent of the figure that is shaded.





Copyright & by Savvas Learning Company LLC. All Rights Reserved 6

Estimate to find an approximate answer or solution. **Compatible numbers** are close to the original numbers and are easy to compute mentally.

1. Use compatible numbers to estimate the percent of each number.

9% of 79 \approx % of 93% of 47 \approx % of \approx

2. The school cafeteria tracked the lunch orders of 800 students who went through the lunch line in one day. 17% of the students ordered baked potatoes.

Write 17% as a compatible number.

17% ≈ __%

Write the percent that you chose as a fraction.





Hamburger 🔛 Meatloaf 🔳 Pizza 📓 Baked Potato

Multiply the fraction by the total number of students. — \times 800 =

About how many students ordered baked potatoes?

3. About how many students ordered pizza? Show your work.

About students ordered pizza.

On the Back!

4. Estimate 44% of 96.



A **percent** compares a part to a whole, using 100 to represent the whole. A percent greater than 100 shows that the part is more than one whole.

1. Complete each equation by writing the percent as an equivalent decimal. The first equation is done for you.

| 200% of 7 = 2 \times 7 | | 150% of 8 = | imes 8 |
|--------------------------|------|--------------|--------|
| 300% of 17 = | × 17 | 600% of 21 = | × 21 |
| 275% of 33 = | × 33 | 480% of 18 = | × |

- 2. In Reggie's class, 75% of the students brought their lunches on Monday. If 21 students brought their lunches, how many students are in the class in all?
 - **a.** Show the percent and the number of students who brought their lunches by filling in the boxes.



b. Because 3 tick marks represents 21 students, each tick mark

represents $21 \div 3$, or students.

c. Complete the equation to find what number is 100% of the students in Reggie's class.

21 + =

So, there are students in Reggie's class.

On the Back!

3. Draw a double number line diagram to solve. 80% of what number is 112?



The **base of a triangle** can be any side of the triangle. The **height of a triangle** is the length of the perpendicular distance from the opposite vertex to the base.

The area of a triangle can be found using the formula $A = \frac{1}{2}bh$.

1. For each triangle, write the base and the height.



2. The two identical triangles shown form one parallelogram.

The lengths of the base of each triangle and of the parallelogram are the . So, the base of the parallelogram is .

The heights of each triangle and of the parallelogram are . So, the height of the parallelogram is

3. The formula for the area, A, of a parallelogram is

 $A = \times$

So, the area of the parallelogram is imes or $ext{ .}$

4. The area of each triangle is the area of the parallelogram.So, what is the area of each triangle?

On the Back!

5. Find the area of a triangle with b = 100 ft and h = 100 ft.





6 in.

5 in.

A **trapezoid** is a quadrilateral with only one pair of opposite sides that are parallel. A **kite** is a quadrilateral with two pairs of adjacent sides that are equal in length.

- **1.** Is the quadrilateral at the right a trapezoid, a kite, or both?
- **2.** To find the area of the trapezoid at the right, decompose it into one and one

3. Rectangle:

The shorter base of the trapezoid is 6 yd. So, the length of the rectangle is

The height of the trapezoid is 5 yd.

So, the width of the rectangle is

Triangle:

The height of both the trapezoid and the triangle is

Subtract the bases of the trapezoid to find the

base of the triangle. 8 - y = yd.

Label the shapes at the right by writing on the blank lines.

- 4. Find the areas of the rectangle and the triangle.
 - RectangleTriangle $A = \ell \times$ $A = \frac{1}{2} \times$ A = \times A = yd^2 $A = \frac{1}{2} \times$ \times x = yd^2
- The area of the trapezoid is the sum of the areas of the rectangle and the triangle. The area of the trapezoid is yd².

On the Back!

6. Find the area of the kite.





Name _____

Reteach to Build Understanding 7-5

A **polyhedron** is a three-dimensional figure made of flat polygon-shaped surfaces called faces. The line segment where two faces intersect is called an edge. The point where several edges meet is called a vertex.

A **net** is a plane figure pattern that makes a polyhedron or a solid when folded.

There are 6 square faces in the net of the cube at the right.



1. Identify the polyhedron from its net. How many faces does the polyhedron have? How many bases does the polyhedron have? What is the polygon shape of the base(s)? What is the polygon shape of the other faces? This is a net of a



Step 1 Identify the polygon shape of the base and its dimensions. Draw it.

The base is a

Its dimensions are

Step 2 Identify the polygon shape of the other faces and their dimensions. Draw them.

The faces are

The base of each triangle measures

The height of each triangle measures

On the Back!

3. Identify the polyhedron from its net.











Reteach to Build Understanding 7-7

A **pyramid** is a three-dimensional figure made of triangular faces and one **base**. If the shape of the base is a triangle, the pyramid is a triangular pyramid. If the base is a square, the pyramid is a square pyramid.

Because the shape of the base of the pyramid on the right is a triangle, the name of the figure is a triangular pyramid.

1. Find the surface area of the square pyramid.

First, complete the net below with four identical faces and one face.

- 2. Use the dimensions of the pyramid to label the dimensions of the net that you completed in Exercise 1.
- **3.** Find the area of each face of the net.

| | Each Triangular Face | Square Face | |
|----|-----------------------------------|----------------------|----------|
| | $A = \frac{1}{2}bh$ | $A=s^2$ | |
| | $A = \frac{1}{2} \times 9 \times$ | A = | 9 ft |
| | $A = ft^2$ | $A = ft^2$ | |
| 4. | Add the areas of the face | es of the net. | |
| | + + | + | |
| | + = | | |
| | So, the surface area of the | ne square pyramid is | ft^2 . |

On the Back!

5. Find the surface area of the pyramid with an equilateral triangle as a base.









Reteach to Build Understanding **7-8**

The **volume** of a rectangular prism is the number of cubic units needed to fill the prism.

The volume, in cubic inches, of the prism at the right is 4 cubic inches because there are 4 unit cubes in the figure.



1. The rectangular prism at the right is shown using $\frac{1}{2}$ -inch cubes.

How many $\frac{1}{2}$ -inch cubes fit along its $2\frac{1}{2}$ -inch length? How many $\frac{1}{2}$ -inch cubes fit along its 2-inch width?

How many $\frac{1}{2}$ -inch cubes fit along the $1\frac{1}{2}$ -inch height of the prism?

How many $\frac{1}{2}$ -inch cubes are on the bottom layer of the prism?

2. How many $\frac{1}{2}$ -inch cubes fill the entire prism?

 $4 \times \times$

The prism is filled with $\frac{1}{2}$ -inch cubes.



3. Use the figure at the right to find the volume of the prism above in cubic inches.

How many $\frac{1}{2}$ -inch cubes are in one cubic inch?

$$60 \times \frac{1}{2} = \frac{60}{60} = \text{ in.}^{3}$$



On the Back!

4. Use the formula $V = \ell wh$ to find the volume of the rectangular prism in Exercise 1. What do you notice?



Name _____

| The mean, median, mode, and range are statistical measures used to describe |
|---|
| a data set. |

Mean The sum of the data divided by the number of values in the data set

Median The middle data value of a data set

Mode The data value that occurs most frequently

Range The difference between the greatest value and the least value

- 1. The table shows the top 10 scores on a recent math test. Find the mean.
 - **a.** Find the sum of the scores.

| | Math | n Test So | ores | |
|----|------|-----------|------|----|
| 96 | 86 | 89 | 96 | 90 |
| 87 | 96 | 92 | 93 | 95 |

96 + 86 + 89 + 96 + 90 + 87 + 96 + 92 + 93 + 95 =

b. Next, the sum by the number of values in the data set.

÷. =

- c. The mean of the top 10 scores on the test is
- 2. The table shows the number of vehicles that pass through an intersection.

a. Find the median of the data.

Step 1 List the data in order from least to greatest.Step 2 Identify the middle value. Circle the median.

18, , , , , 25,

- **b.** Find the mode of the data.
- **c.** Find the range of the data.

On the Back!

3. Find the mean, median, mode, and range of the homework time data at the right.

Traffic Counts

| Hour | Number of Vehicles |
|------|-----------------------|
| 1 | 18 |
| 2 | 20 |
| 3 | 25 |
| 4 | 34 |
| 5 | 20 |
| 6 | 21 |
| 7 | 29 |



_

,

Time Spent on Homework in Minutes

24, 27, 17, 19, 23, 39, 20, 29, 33, 33



A **box plot** shows a distribution of data values on a number line. The median divides the data in half. **Quartiles** divide the data into four equal parts. To create a box plot, you need 5 values: the minimum, the maximum, the median, the first quartile, and the third quartile.



1. The data set below represents the heights, in inches, of 11 professional basketball players.

80, 74, 83, 81, 84, 83, 71, 73, 76, 81, 76

Fill in the blanks to order the data values from least to greatest. Then circle the minimum and maximum heights and label the median and the quartiles.



2. Make a box plot.



On the Back!

3. The data set below represents the weights, in pounds, of several pumpkins in a contest. Make a box plot for the data.

13, 14, 29, 22, 18, 16, 33, 35, 41, 27





The **absolute deviation** is the distance between each data value and the mean. You can find the absolute deviation from the mean by computing the absolute value of the difference between these numbers.

| Value | Absolute Deviation |
|-------|----------------------|
| 78 | 87 - 78 = 9 |
| 85 | 87 - 85 = 2 |
| 87 | 87 - 87 = 0 |
| 98 | 98 - 87 = 11 |

The mean of the 4 values in the table is 87.

The **mean absolute deviation**, or **MAD**, tells how far a typical data value is from the mean. Use the above absolute deviations to find the MAD.

MAD:
$$\frac{9+2+0+11}{4} = \frac{22}{4} = 5.5$$

The **interquartile range**, or **IQR**, is the difference between the third quartile and the first quartile.

IQR = 92.5 - 81.5 = 11

1. Joey raises rabbits. Six different litters yielded 5, 10, 8, 12, 1, and 6 rabbits. To find the MAD of the data, first find the mean.

The mean of the data is rabbits.

- 2. List the number of units each data value is from the mean.
 - 2, , , , , , ,
- 3. Find the mean absolute deviation.

 $MAD = \frac{2 + \frac{1}{2} + \frac{$

4. Find the interquartile range.

IQR = Q3 - Q1 = - =

On the Back!

 Make a table of the absolute deviations for each data value, and find the MAD of the data set. Then find the IQR. 40, 78, 145, 94, 56, 85



A **data distribution** describes how data values are arranged. If the data set is symmetric, use the mean and mean absolute deviation (MAD) to summarize it.

If the data set is not symmetric, use the median and interquartile range (IQR) to summarize it.

1. The dot plot shows the number of grams of protein required each day for different diet plans.



- 2. Use the data distribution of the museum visitors.
 a. Use quartiles to describe the data distribution.
 Q1: visitors
 Q2: visitors
 Q3: visitors
 - **b.** Circle the words to correctly describe the shape of the data distribution.

The quartiles are / are not equal in size, so the data are / are not symmetric. The data values are more spread out to the left / right.

c. Find the interquartile range to describe the data distribution.

IQR: –

On the Back!



3. Describe the shape of the data distribution shown in the box plot. Then use appropriate measures to summarize it.

