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Math Common Core State Standards Review

5th Grade into 6th Grade

5th Grade Common Core Overview

Operations and Algebraic Thinking

- Write and interpret numerical expressions.
- Analyze patterns and relationships.

Number and Operations in Base Ten

- Understand the place value system.
- Perform operations with multi-digit whole numbers and with decimals to hundredths.

Number and Operations—Fractions

- Use equivalent fractions as a strategy to add and subtract fractions.
- Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

Measurement and Data

- Convert like measurement units within a given measurement system.
- Represent and interpret data.
- Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

Geometry

- Graph points on the coordinate plane to solve real-world and mathematical problems.
- Classify two-dimensional figures into categories based on their properties.

5th Grade: Operations and Algebraic Thinking

Write and interpret numerical expressions.
CCSS.Math.Content.5.OA.A.1
Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

CCSS.Math.Content.5.OA.A.2
Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.*

Analyze patterns and relationships.
CCSS.Math.Content.5.OA.B.3
Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.*

Name _____ Date _____ Time _____

Grouping Numbers to Add and Multiply

Use parentheses to show which 2 numbers you add or multiply first.
Solve each problem.

Example 1: (23 + 13) + 54 + 72

(36 + 54) + 72

90 + 72

162

Example 2: 2 * (5 * 4) * 3

2 * (20 * 3)

2 * 60

120

1. 78 + 46 + 51 + 13

_____

_____

_____

2. 11 * 2 * 5 * 7

_____

_____

_____

Write a number sentence using parentheses to show how you grouped the numbers to solve each problem.

5. A group of 6 friends took a 4-day biking trip. They biked 22 miles the first day, 18 miles the second day, 24 miles the third day, and 26 miles the last day. How many miles did the group bike altogether?

_____ miles

Number sentence: _____

6. Georgette works 5 days a week. Each day she sold 12 books at $9 each. How much money did she collect during the week?

_____

Number sentence: _____

Name _____ Date _____ Time _____

Writing Expressions to Match Number Stories

Jolee was at the store and thinking aloud, "I need 4 times 3 plus 3. I need $15." Her sister Ruby said, "No, you need $24 dollars."

1. How did Jolee get $15? _____

2. How did Ruby get $24? _____

The sisters could not agree. Finally Jolee explained, "I need 1 gallon of milk for $3, and 3 pounds of butter for $4 each." Now they could figure out how much money they needed.

3. Who do you think was right? Explain your answer. _____

_____

_____

_____

Write an open number sentence using parentheses to show the order of operations.

4. For a science project, Sheila and 2 friends agreed to share leaves that they collected together for 2 posters. They have a pile of 15 and a pile of 23 leaves. They added them up and then divided them into 2 equal groups. How many leaves will be on each poster?

Open number sentence: _____

5. The Pet Rescue Club has 12 members who each brought a friend with them on Bring a Friend Day. Mrs. Franks passed out 48 treats to each member, who shared them equally with their friend. How many treats did each person get?

Open number sentence: _____

Name: _____ Date: _____ Time: _____

Writing Expressions to Match Number Stories

1. Two different answers were found from the following statement:

"We have 8 times $5 minus $2 to spend at the toy store."

Write an expression using parentheses to show how you would get $38.

_____

Write an expression using parentheses to show how you would get $24.

_____

2. Write an open number sentence using parentheses to show the order of operations.

Carlos, Gordon, and Remy each find 6 sea shells. All the shells are combined for a shell collection. One of them goes back to the beach and collects 14 more shells. How many shells do the boys have now for their collection?

_____

3. Write an open number sentence using parentheses to show the order of operations.

A sporting event plans to give 120 free t-shirts to fans. They will distribute the same amount to the 8 corner sections in the arena, as well as to the 16 other sections. How many t-shirts will be distributed to each section of the arena?

_____

Name: _____ Date: _____ Time: _____

Matching Number Stories to Expressions

1. Write an expression that describes the table shown below.

H	*K*
4	20
5	25
6	30
7	35

_____

2. Write a number sentence that describes the table shown below.

C	*D*
24	3
56	7
80	10
120	15

_____

3. Draw a line from each story to the number model that matches.

a. Kamilah baked 3 trays of muffins with one dozen on each tray. She and her brother ate 5 of the muffins while they were still warm.

b. Dante baked 3 trays of muffins. He started with one dozen on each tray. Then his mom removed 5 muffins from each tray to send to Dante's grandmother.

$5 * (12 - 3)$

$3 * 12 - 5$

$3 * (12 - 5)$

$5 * 12 - 3$

4. Which number model below matches the number story? Fill in the circle of the best answer.

A grocery store received a shipment of 100 cases of soda. Each case contained 8 six-packs of cans. After inspection, the store found that 18 cans were damaged.

Ⓐ $(100 * (8 * 6)) - 18$

Ⓑ $((100 + 8) * 6) - 18$

Ⓒ $(100 - 18) * (8 * 6))$

Ⓓ $(100 * (8 + 6)) - 18$

Name Date Time

Use Two Patterns to Solve a Footrace Problem

Edgar is 10 years old and can run an average of 5 yards per second. His sister Maya is 8 and can run an average of 4 yards per second.

Edgar and Maya have a 50-yard race. Because Maya is younger, Edgar gives her a 5-yard head start.

Complete the table showing the distances Edgar and Maya are from the starting line after 1 second, 2 seconds, 3 seconds, and so on. Use the table to answer the questions below.

Time (sec)	Distance (yd)	
	Edgar	Maya
start	0	5
1		
2		13
3	15	
4		
5		
6		
7		33
8		
9		
10		

1. Who wins the race? _____

2. What is the winning time?

_____

3. Who was in the lead for the first part of the race? _____

4. Who is ahead after 4 seconds and by how much?

_____

5. What if the race had been 40 yards instead of 50?

_____

_____

_____

6. Describe Edgar's pattern.

_____

7. Describe Maya's pattern.

_____

Name: _____ Date: _____ Time: _____

Use Two Patterns to Solve a Footrace Problem

Read the story below and use the table to answer Problems 1 – 4.

Max and Rachel have a 50-yard race. Since Rachel is younger, Max gives her a 15-yard head start.

Max can run an average of 5 yards per second. Rachel can run an average of 3 yards per second.

Time (sec.)	Distance run (yd.)	
	Max	Rachel
1	**0**	**15**
2		
3		**21**
4	**15**	
5		
6		
7		**33**
8		
9		
10		

1. Complete the table above showing the distances Max and Rachel are from the starting line after 1 second, 2 seconds, 3 seconds, and so on.

2. If Rachel continued to run, how long would it take her to run 54 yards?

_____

3. What is the winner's final time?

_____

Who won? _____

4. Describe the runners' positions after 8 seconds had passed.

_____

_____

_____

Name: _____ Date: _____ Time: _____

Use Two Patterns to Solve a Footrace Problem

Read the story below and use the table to answer Problems 1–3.

Joanna and Melvin both have to wrap 50 small gifts for kids. Joanna already has wrapped 6 gifts before Marvin starts wrapping.

Joanna can wrap an average of 4 gifts per minute. Melvin can wrap an average of 5 gifts per minute.

Time (min)	Wrapped Gifts	
	Joanna	Melvin
1	**6**	**0**
2		**5**
3	**14**	
4		
5		**20**
6		
7		
8	**34**	
9		
10		

1. Complete the table above showing the number of gifts Joanna and Melvin wrapped after 1 minute, 2 minutes, 3 minutes, and so on.

2. How many minutes will it take the person who finishes first?

   _____

3. What is the difference in the number of wrapped gifts between the two wrappers after 9 minutes?

   _____

5th Grade: Numbers and Operations in Base Ten

Understand the place value system.
CCSS.Math.Content.5.NBT.A.1
Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

CCSS.Math.Content.5.NBT.A.2
Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

CCSS.Math.Content.5.NBT.A.3
Read, write, and compare decimals to thousandths.

CCSS.Math.Content.5.NBT.A.3.a
Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.

CCSS.Math.Content.5.NBT.A.3.b
Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

CCSS.Math.Content.5.NBT.A.4
Use place value understanding to round decimals to any place.

Perform operations with multi-digit whole numbers and with decimals to hundredths.
CCSS.Math.Content.5.NBT.B.5
Fluently multiply multi-digit whole numbers using the standard algorithm.

CCSS.Math.Content.5.NBT.B.6
Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

CCSS.Math.Content.5.NBT.B.7
Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Name _____ Date _____ Time _____

Decimals through Thousandths

Tens	Ones	Tenths	Hundredths	Thousandths

Complete.

1. The 8 in 29.831 stands for 8 tenths or 0.8.
2. The 3 in 5.413 stands for 3 _____ or _____.
3. The 9 in 49.54 stands for 9 _____ or _____.
4. The 7 in 5.672 stands for 7 _____ or _____.
5. The 0 in 76.01 stands for 0 _____ or _____.
6. The 4 in 45.2 stands for 4 _____ or _____.

Follow the steps to find each number.

7. Write 6 in the ones place.
   Write 4 in the thousandths place.
   Write 9 in the tens place.
   Write 0 in the hundredths place.
   Write 1 in the tenths place.

   ___ ___.___ ___ ___

8. Write 6 in the tens place.
   Write 4 in the tenths place.
   Write 9 in the hundredths place.
   Write 0 in the ones place.
   Write 1 in the thousandths place.

   ___ ___.___ ___ ___

9. Write 6 in the thousandths place.
   Write 4 in the ones place.
   Write 9 in the tenths place.
   Write 0 in the hundredths place.
   Write 1 in the tens place.

   ___ ___.___ ___ ___

10. Write 6 in the tenths place.
    Write 4 in the tens place.
    Write 9 in the thousandths place.
    Write 0 in the tenths place.
    Write 1 in the ones place.

    ___ ___.___ ___ ___

Name: _____ Date: _____ Time: _____

Decimals through Thousandths

Tens	Ones	Tenths	Hundredths	Thousandths

1. Write 4 in the ones place
   Write 6 in the hundredths place
   Write 9 in the thousandths place
   Write 8 in the tenths place
   Write 2 in the tens place

   _____ _____ . _____ _____ _____

2. Write 7 in the thousandths place
   Write 9 in the hundredths place
   Write 3 in the tenths place
   Write 1 in the ones place
   Write 8 in the tens place

   _____ _____ . _____ _____ _____

3. **a.** The 6 in 80.236 stands for 6 _____ or _____.

   b. The 9 in 94.561 stands for 9 _____ or _____.

   c. The 3 in 21.355 stands for 3 _____ or _____.

   d. The 5 in 45.218 stands for 5 _____ or _____.

   e. The 1 in 54.321 stands for 1 _____ or _____.

   f. The 2 in 19.524 stands for 2 _____ or _____.

Name _____ Date _____ Time _____

Finding Patterns in Powers of 10

Find the patterns and complete the table below.

1,000,000	100,000	10,000				1
				one hundred		one
			$10 * 10 * 10$			$10 * \frac{1}{10}$
					10^1	10^0

1. Describe at least one pattern you used to complete the table.

2. Describe what happens to the decimal point in the standard notation as you move one column to the right in the table.

3. Describe what happens to the value of the digit 1 when you move one column to the left.

4. Describe what happens to the value of the digit 1 when you move one column to the right.

5. Describe a pattern in the number of zeros used in the standard notation that you used to complete the table.

Name _____ Date _____ Time _____

Translating between Standard and Scientific Notations

Rewrite each number in standard notation.

1. $9 * 10^3 =$ 9,000 **2.** $2 * 10^7 =$ _____

3. $4 * 10^1 =$ _____ **4.** $7.3 * 10^4 =$ _____

5. $1 * 10^5 =$ _____ **6.** $5.2 * 10^4 =$ _____

Rewrite each number in scientific notation.

7. 2,000,000 = $2 * 10^6$ **8.** 1,000,000,000 = _____

9. 36,000 = _____ **10.** 7,200 = _____

11. 800 = _____ **12.** 9,400,000,000 = _____

Complete the following facts by writing the number in either standard or scientific notation.

13. A fully-fueled rocket could weigh 6,200,000, or _____, pounds.

14. The distance from the Earth to the Moon is $2.4 * 10^5$, or _____, miles.

Name: _____ Date: _____ Time: _____

Translating between Standard and Scientific Notations

1. Write the following numbers using exponential notation.

a. 7,000 _____

b. 400 _____

c. 900,000 _____

2. Write the following numbers using expanded notation.

a. 350 _____

b. 6,038 _____

c. 294 _____

3. Rewrite each number in standard notation.

a. $5 * 10^4$ _____

b. $3 * 10^2$ _____

c. $8 * 10^6$ _____

4. Rewrite each number in standard notation.

a. $7.5 * 10^4$ _____

b. $9.9 * 10^1$ _____

c. $4.2 * 10^7$ _____

5. Rewrite each number in scientific notation.

a. 30,000 _____

b. 2,000 _____

c. 70,000,000 _____

6. Rewrite each number in scientific notation.

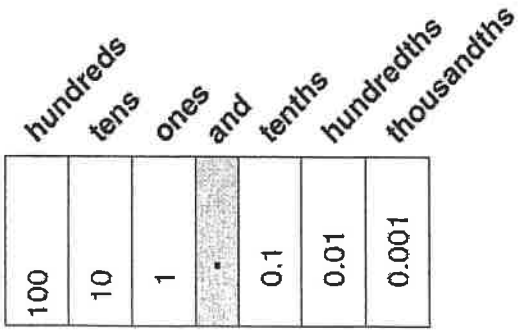
a. 950,000,000 _____

b. 84,000 _____

c. 3,600,000 _____

Name _____ Date _____ Time _____

Expanded and Number-and-Word Notations



Write each of the following numbers in expanded notation.

Example: 5.96 (5 * 1) + (9 * 0.1) + (6 * 0.01)

1. 0.258 _____
2. 9.303 _____
3. 47.6 _____
4. 7.051 _____
5. 0. 426 _____

Write each of the following numbers in number-and-word notation.

Example: 5.96 five and 96 hundredths

6. 13.063 _____
7. 6.172 _____
8. 23.62 _____
9. 481.5 _____
10. 0.918 _____

Name: _____ Date: _____ Time: _____

Expanded and Number-and-Word Notations

1. In the number 81.63,

the 8 means _____.

the 1 means _____.

the 6 means _____.

the 3 means _____.

2. Write each of the following numbers in expanded notation.

a. 23,982 _____

_____

b. 605,473 _____

_____

3. Write each of the following numbers in expanded notation.

a. 9.356 _____

_____

b. 2.818 _____

_____

4. Write each of the following numbers in expanded notation.

a. 24.862 _____

_____

b. 0.157 _____

_____

5. Write each of the following numbers in number-and-word notation.

a. 3.12 _____

_____

b. 45.026 _____

_____

6. Write each of the following numbers in number-and-word notation.

a. 6.205 _____

_____

b. 33.876 _____

_____

Name _____ Date _____ Time _____

Comparing Tenths, Hundredths, and Thousandths

Compare the decimals.

1. 0.24 0.18

0.18 < 0.24

2. 0.1 0.009

_____ > _____

3. 0.2 0.35

_____ > _____

4. 0.301 0.008

_____ > _____

5. 3.027 3.1

_____ < _____

6. 15.091 15.087

_____ < _____

Write the smallest and largest decimals.

7. 0.606, 0.6, 0.66, 6.6

_____ smallest _____ largest

8. 2.099, 0.27, 1.8, 2.1

_____ smallest _____ largest

9. 5.4, 5.04, 50.4, 50.004

_____ smallest _____ largest

10. 0.02, 0.008, 0.22, 0.202

_____ smallest _____ largest

11. "What has a foot on each side and one in the middle?"
To find the answer, put the decimals in order from smallest to largest.

0.089	0.032	0.09	0.008	0.801	0.12	0.34	0.002	0.81	0.127
R	A	D	Y	C	S	I	A	K	T

Write your answers in the following table. The first answer is done for you.

0.002									
A									

Name: _____ Date: _____ Time: _____

Comparing Tenths, Hundredths, and Thousandths

1. Compare the decimals.

a. 0.73 0.68

_____ < _____

b. 0.03 0.009

_____ < _____

c. 0.08 0.2

_____ > _____

d. 6.165 6.094

_____ > _____

2. Write the smallest and largest decimals.

a. 3.4, 3.04, 0.4, 0.043

_____ (smallest) _____ (largest)

b. 0.062, 0.602, 2.06, 0.02

_____ (smallest) _____ (largest)

c. 0.025, 0.005, 0.25 , 0.5

_____ (smallest) _____ (largest)

3. Put the decimals in order from smallest to largest.

0.065 0.37 0.492 0.23 0.4 0.05 3.078 0.72

_____ , _____ , _____ , _____ , _____ , _____ , _____ , _____

(smallest) (largest)

Name Date Time

Rounding Decimals

Example:

Supermarkets often show unit prices for items. This helps customers comparison shop. A unit price is found by dividing the price of an item (in cents, or dollars and cents) by the quantity of the item (often in ounces or pounds). When the quotient has more decimal places than are needed, it is *rounded to the nearest tenth* of a cent.

23.822 cents (per ounce) is rounded down to 23.8 cents.

24.769 cents is rounded up to 24.8 cents.

18.65 cents is halfway between 18.6 cents and 18.7 cents. It is rounded up to 18.7 cents.

Round these unit prices to the nearest tenth of a cent (per ounce).

1. 18.271¢ _____

2. 19.796¢ _____

3. 47.936¢ _____

4. 16.916¢ _____

5. 60.431¢ _____

6. 25.583¢ _____

7. 8.179¢ _____

8. 36.866¢ _____

9. 12.584¢ _____

10. 43.928¢ _____

11. 5.851¢ _____

12. 22.814¢ _____

Name: _____ Date: _____ Time: _____

Rounding Decimals

1. Round each number to the nearest thousand.

a. 623,772 _____

b. 682,598 _____

c. 397,541 _____

d. 857,920 _____

2. In the number 85.31,

the 1 means _____.

the 8 means _____.

the 5 means _____.

the 3 means _____.

3. Round each price to the nearest tenth of a cent.

a. 90.328¢ _____¢

b. 51.764¢ _____¢

c. 93.568¢ _____¢

d. 44.299¢ _____¢

4. Round each price to the nearest tenth of a cent.

a. 25.466¢ _____¢

b. 25.003¢ _____¢

c. 38.526¢ _____¢

d. 99.277¢ _____¢

5. Round each price to the nearest tenth of a cent.

a. 82.508¢ _____¢

b. 36.276¢ _____¢

c. 96.429¢ _____¢

d. 46.627¢ _____¢

6. Explain how you rounded the price in Problem 5d.

Name _____ Date _____ Time _____

Choose Your Algorithm

Use your favorite multiplication algorithm to find the following products. Show your work in the computation grid below or on a separate sheet of paper.

Example: 26 * 18 = 468

1. 31 * 45 = _____

2. _____ = 24 * 186

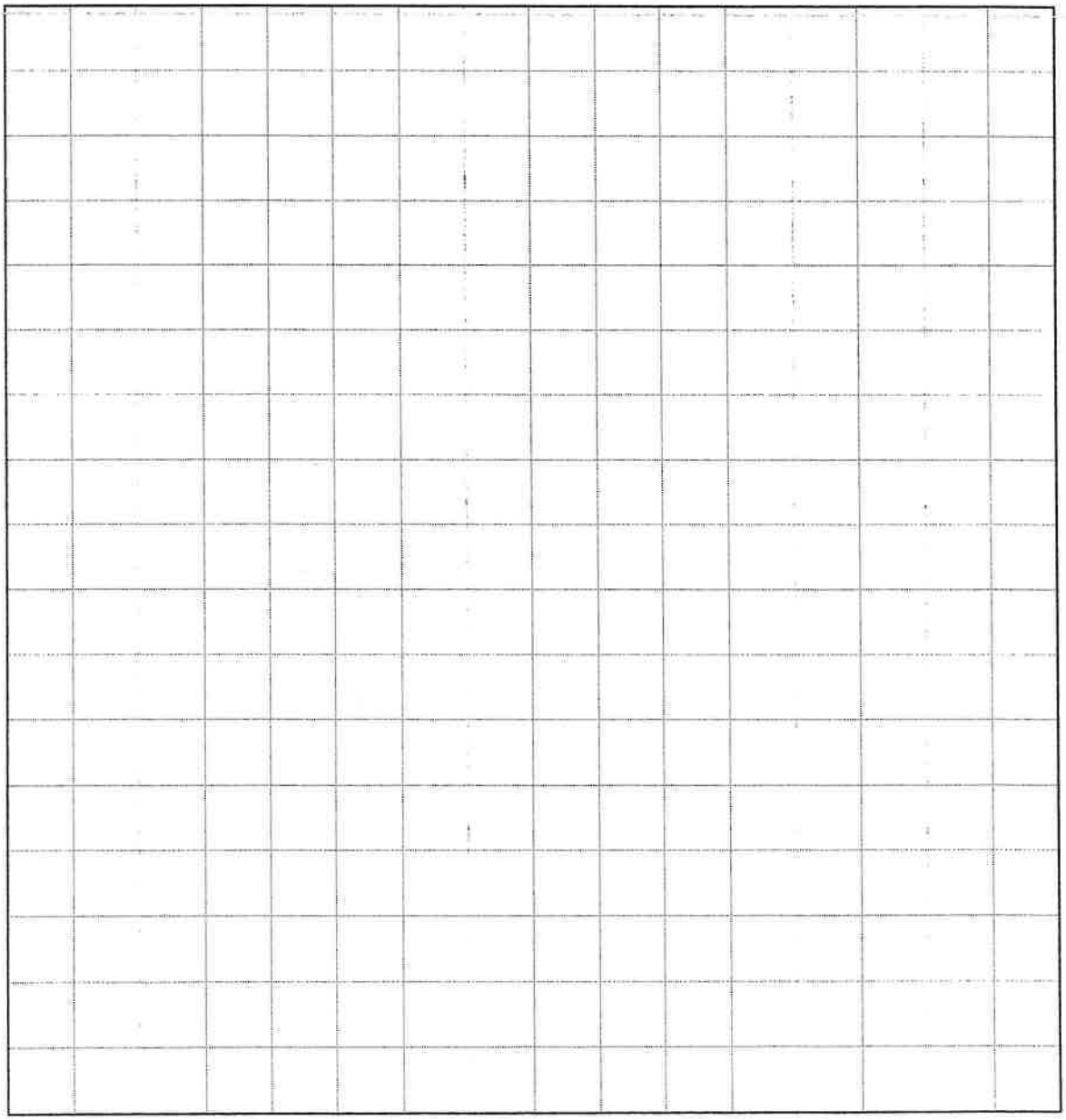
3. _____ = 87 * 51

4. _____ = 724 * 60

5. 26 * 32 = _____

6. 19 * 568 = _____

7. _____ = 39 * 487



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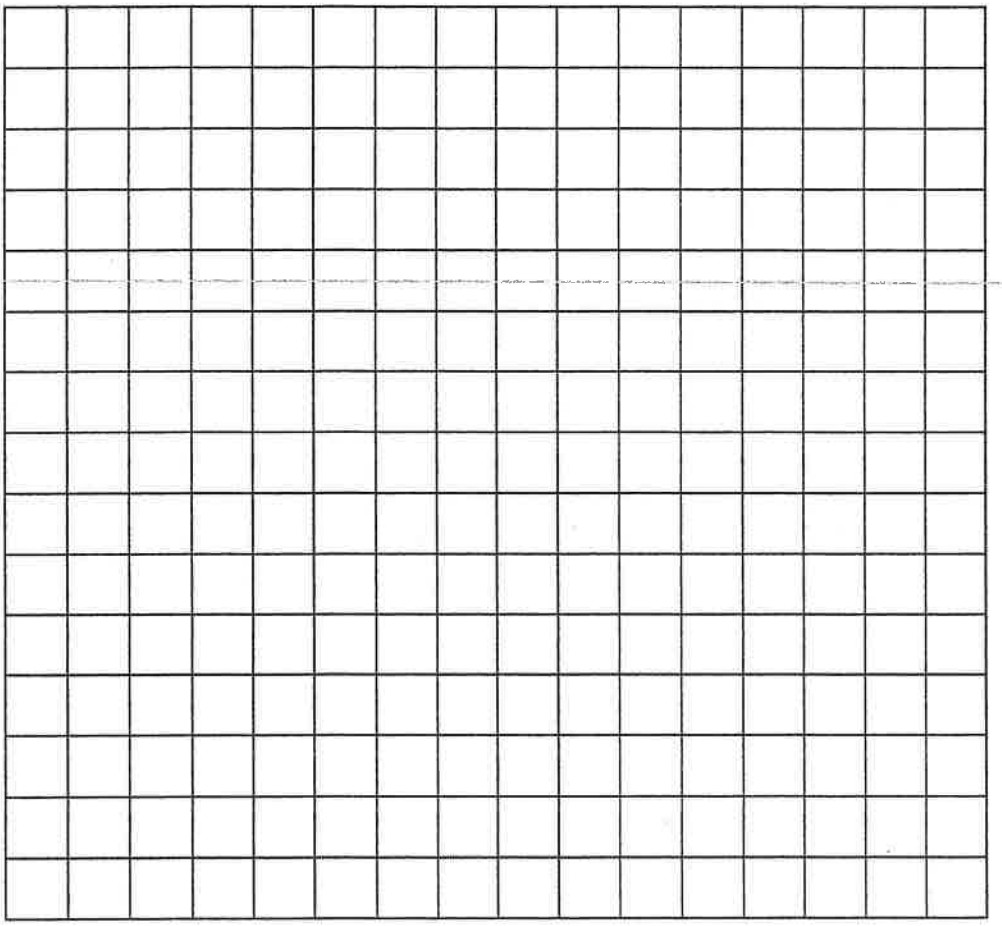
Choose Your Algorithm

Multiply. Use extra grid paper if needed.



1. **a.** $18 \times 24 =$ _____ **b.** _____ $= 42 \times 66$

2. **a.** $192 \times 21 =$ _____ **b.** _____ $= 17 \times 472$

3. **a.** $66 \times 876 =$ _____ **b.** _____ $= 888 \times 52$

Name _____ Date _____ Time _____

Estimate Quotients to Solve Division Problems

First estimate the quotient. Then, use any algorithm to find the exact answer. Show your work. Use the computation grid to help you divide, if needed.

Example:

712 ÷ 8 = ?

Estimate: 800 ÷ 10 = 80

Exact answer: 89

```
  89
8)712
 -64
  72
 -72
   0
```

1. 546 ÷ 6 = ?

Estimate: _____

Exact answer: _____

2. 2,628 ÷ 12 = ?

Estimate: _____

Exact answer: _____

3. 4,424 ÷ 7 = ?

Estimate: _____

Exact answer: _____

4. 5,082 ÷ 726 = ?

Estimate: _____

Exact answer: _____

5. Raoul has 237 stamps. He displays them in rows with 8 stamps in each row. How many complete rows can he display?

Estimate: _____

Exact answer: _____ rows

6. Regina put 1,605 math books into boxes. Each box held 15 books. How many boxes did she use?

Estimate: _____

Exact answer: _____ boxes

7. Explain your estimation strategy for question 6.

_____

_____

_____

_____

Name: _____ Date: _____ Time: _____

Estimate Quotients to Solve Division Problems

For Problems 3–5, first estimate the quotient. Then use any algorithm to find the exact answer. Use a computation grid if needed.

1. Solve.

a. $4 * 700 =$ _____

b. $3{,}200 \div 8 =$ _____

2. Divide. Express the remainder as a fraction.

$887 \div 72 =$ _____

3. Malik built 189 birdhouses to sell at a school fundraiser. He put the birdhouses in boxes. If each box holds 9 birdhouses, how many boxes were needed to hold all of the birdhouses?

Estimate:

_____

Solution: _____ boxes

4. Mark is going on a trip, and he needs to drive 2,135 miles. If he has 5 days to drive, how many miles does he need to drive each day?

Estimate:

_____

Solution: _____ miles

5. There are 1,428 pages in the book Jun is reading for school. She has 21 days to read the book. About how many pages should she read each day?

Estimate:

_____

Solution: _____ pages

6. Explain how you found your estimate in Problem 5.

Name Date Time

Add or Subtract Using an Algorithm

Add or subtract mentally or with a paper-and-pencil algorithm.
Pay attention to the + and − symbols.

Example: 3.04 + 2.8 = 5.84

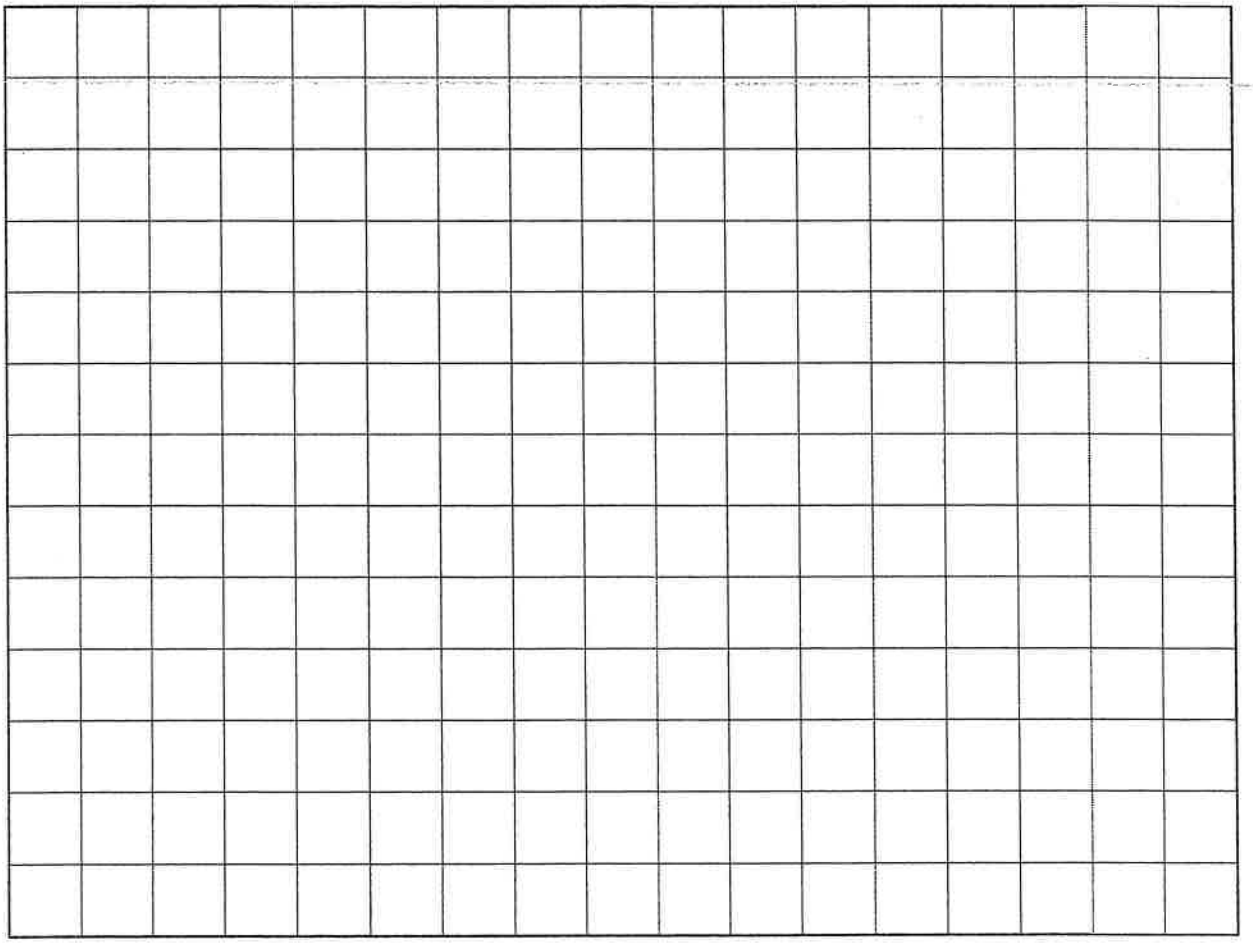
1. 2.05 + 1.83 = _____

2. 2.4 + 0.26 + 3.01= _____

3. 2.31 − 1.88 = _____

4. 18 + 2.9 = _____

5. 2 − 0.67 = _____



6. Choose one of the problems from above. Explain the method you used to solve the problem.

_____

_____

_____

Name: _____ Date: _____ Time: _____

Add or Subtract Using an Algorithm

1. In the number 9.157,

the 1 means _____.

the 5 means _____.

the 7 means _____.

the 9 means _____.

2. There were 31 bottles of water. The class drank 18 bottles during lunch. How many bottles of water are left?

_____ bottles

Quantity

Quantity	
	_____
	Difference

Number model: _____

3. Solve mentally or with a paper-and-pencil algorithm.

_____ = 0.31 + 0.98

4. Add mentally or with a paper-and-pencil algorithm.

_____ = 45.61 + 8.7

5. Solve. Use a pencil-and-paper algorithm.

3.6 – 0.7 = _____

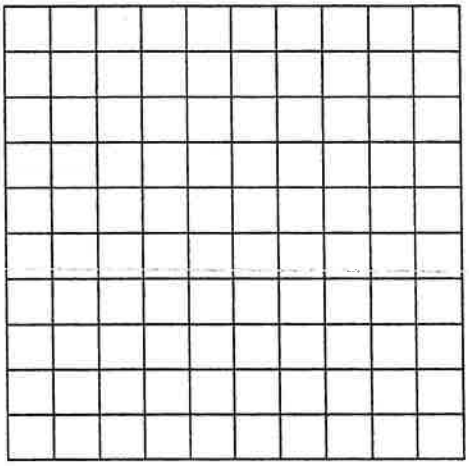
6. Explain which paper-and-pencil algorithm you used to solve Problem 5.

Name: _____ Date: _____ Time: _____

Using Benchmark Fractions to Multiply Mentally

1. Shade each factor. Then find the product.

$0.3 * 0.5$



$0.3 * 0.5 =$ _____

2. Solve the following problems mentally.

a. $6.8 * 0.1 =$ _____

b. $0.25 * 2 =$ _____

3. Solve the following problems mentally.

a. $8.4 * 0.25 =$ _____

b. $0.5 * 12.4 =$ _____

4. Solve the following problems mentally.

a. $0.5 * 0.08 =$ _____

b. $6.25 * 0.2 =$ _____

5. Explain how you used mental multiplication to find the answer in Problem 4b.

Name _____ Date _____ Time _____

Choose Your Algorithm

Use any multiplication algorithm you choose to solve the following problems.
Show your work.

Example:
$$\begin{array}{r} 0.28 \\ *\ 1.3 \\ \hline 0.364 \end{array}$$

1.
$$\begin{array}{r} 0.47 \\ *\ 0.83 \\ \hline \end{array}$$

2.
$$\begin{array}{r} 19.6 \\ *\ 3 \\ \hline \end{array}$$

3.
$$\begin{array}{r} 23.65 \\ *\ 6 \\ \hline \end{array}$$

4.
$$\begin{array}{r} 0.48 \\ *\ 25.2 \\ \hline \end{array}$$

5.
$$\begin{array}{r} 0.21 \\ *\ 28 \\ \hline \end{array}$$

6.
$$\begin{array}{r} 4.8 \\ *\ 25 \\ \hline \end{array}$$

7.
$$\begin{array}{r} 1.52 \\ *\ 0.4 \\ \hline \end{array}$$

8. Select one problem. Explain your multiplication algorithm.

Name Date Time

Dividing Decimals by 1-Digit Divisors

Example: Helen has to make 7 identical hats. She has 17.5 meters of ribbon.

How much ribbon can she use to make one hat? 2.5 meters

Explain the strategy you used to solve the number story.

I estimated the quotient to decide where to place the decimal point.

1. Jan is building shelves. She has a board that is 4.5 meters long. She wants to cut it into 5 pieces of equal length. What will be the length of each piece? _____ meters

2. Three girls set up a fruit juice stand. On Wednesday they made $8.52. If they shared the money equally, how much did each girl get? $_____

3. Al and his three friends went out to dinner. The total bill, including tax and tip, was $44.12. They decided that each would pay the same amount. How much did each person pay? $_____

4. Vic divides a 98.4 cm piece of ribbon into 4 equal pieces. What is the length of each piece? _____ centimeters

Name: _____ Date: _____ Time: _____

Dividing Decimals by 1-Digit Divisors

1. Divide.

$7\overline{)182}$

Answer: _____

2. Divide.

a. 78 ÷ 6 = _____

b. 810 / 5 = _____

3. Estimate the quotient, and then find the exact answer. Use the estimate to place the decimal point correctly.

Number model: _____

4.62 ÷ 6 = _____

4. Estimate the quotient, and then find the exact answer. Use the estimate to place the decimal point correctly.

Number model: _____

1.64 ÷ 4 = _____

5. Janet walked 11.25 miles in 3 hours. On average, how many miles did she walk per hour?

_____ miles

6. Explain how you found the answer in Problem 5.

5th Grade: Number & Operations- Fractions

Use equivalent fractions as a strategy to add and subtract fractions.
CCSS.Math.Content.5.NF.A.1
Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)*

CCSS.Math.Content.5.NF.A.2
Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.*

Apply and extend previous understandings of multiplication and division.
CCSS.Math.Content.5.NF.B.3
Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*

CCSS.Math.Content.5.NF.B.4
Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

CCSS.Math.Content.5.NF.B.4.a
Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)*

CCSS.Math.Content.5.NF.B.4.b
Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

CCSS.Math.Content.5.NF.B.5
Interpret multiplication as scaling (resizing), by:

CCSS.Math.Content.5.NF.B.5.a
Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.

CCSS.Math.Content.5.NF.B.5.b
Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.

CCSS.Math.Content.5.NF.B.6
Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

CCSS.Math.Content.5.NF.B.7
Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.[1]

CCSS.Math.Content.5.NF.B.7.a
Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3.*

CCSS.Math.Content.5.NF.B.7.b
Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4.*

CCSS.Math.Content.5.NF.B.7.c
Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?*

Name _____ Date _____ Time _____

Adding Mixed Numbers

To add mixed numbers in which the fractions do not have the same denominator, you must first rename one or both fractions so that both fractions have a common denominator.

Example: $2\frac{3}{5} + 4\frac{2}{3} = ?$

- Find a common denominator. The QCD of $\frac{3}{5}$ and $\frac{2}{3}$ is $5 * 3 = 15$.
- Write the problem in vertical form, and rename the fractions.

$$\begin{array}{r} 2\frac{3}{5} \\ +\ 4\frac{2}{3} \end{array} \rightarrow \begin{array}{r} 2\frac{9}{15} \\ +\ 4\frac{10}{15} \end{array}$$

- Add. $6\frac{19}{15}$
- Rename the sum. $6\frac{19}{15} = 6 + \frac{15}{15} + \frac{4}{15} = 6 + 1 + \frac{4}{15} = 7\frac{4}{15}$

Add. Write each sum as a mixed number in simplest form. Show your work.

1. $2\frac{2}{3} + 3\frac{1}{4} =$ _____

2. $5\frac{1}{2} + 2\frac{3}{5} =$ _____

3. $6\frac{1}{3} + 2\frac{2}{9} =$ _____

4. $1\frac{1}{2} + 4\frac{1}{4} =$ _____

5. Sam purchased $4\frac{1}{8}$ yards of fleece fabric for a jacket and $6\frac{1}{3}$ yards of fleece fabric to make a blanket. How much fabric did he purchase?

_____

Name _____ Date _____ Time _____

Adding Mixed Numbers with Unlike Denominators

Add. Write each sum as a mixed number in simplest form. Show your work.

Example: $8\frac{2}{5} + 2\frac{1}{2} + 3\frac{1}{10} =$ 14

$(8\frac{2}{5} + 3\frac{1}{10}) + 2\frac{1}{2} = (8\frac{4}{10} + 3\frac{1}{10}) + 2\frac{1}{2} =$

$11\frac{5}{10} + 2\frac{1}{2} = 11\frac{1}{2} + 2\frac{1}{2} = 14$

1. $7\frac{1}{5} + 2\frac{4}{5} + 1\frac{3}{5} =$ _____

2. $3\frac{2}{5} + 5\frac{7}{10} + 4\frac{3}{10} =$ _____

3. $4\frac{3}{4} + 2\frac{1}{12} + 1\frac{1}{2} =$ _____

4. $2\frac{1}{3} + 4\frac{3}{4} + 5\frac{2}{3} =$ _____

5. Josiah was painting walls in his house. Before lunch, he painted $1\frac{2}{3}$ walls. After lunch, he painted another $1\frac{1}{5}$ walls. The next day, he painted $1\frac{1}{3}$ walls. How many walls did he paint during the two days?

_____

6. Julie's mom made muffins for Julie and two of her friends to share. Julie ate $1\frac{3}{4}$ muffins. One of her friends ate $1\frac{1}{2}$ muffins. Her other friend ate $1\frac{1}{4}$ muffins. How many muffins did Julie and her friends eat altogether?

_____

7. Janet was reading a book and read $8\frac{3}{4}$ pages one day. The next day she read $7\frac{1}{3}$ pages. On the third day she read $5\frac{1}{2}$ pages. How many pages did she read during the three days?

_____

Name: _____ Date: _____ Time: _____

Adding Mixed Numbers with Unlike Denominators

1. Add. Write your answers as fractions in simplest form.

a. $\frac{4}{5} + \frac{9}{10} =$ _____

b. $\frac{3}{4} + \frac{2}{3} =$ _____

2. Subtract. Write your answers as fractions in simplest form.

a. $\frac{3}{5} - \frac{1}{2} =$ _____

b. $\frac{3}{4} - \frac{2}{3} =$ _____

3. Add. Write each sum as a mixed number in simplest form. Show your work.

a. $4 + 3\frac{1}{2} + 3\frac{2}{3} =$ _____

b. $1\frac{1}{2} + 5\frac{5}{12} + 1\frac{1}{6} =$ _____

4. Add. Write each sum as a mixed number in simplest form. Show your work.

a. $3\frac{1}{6} + 3\frac{3}{4} + 1\frac{1}{3} =$ _____

b. $4\frac{1}{2} + 1\frac{1}{5} + 2\frac{3}{10} =$ _____

5. Add. Write each sum as a mixed number in simplest form. Show your work.

a. $4\frac{1}{5} + \frac{2}{5} + 5\frac{1}{3} =$ _____

b. $2\frac{11}{12} + 2\frac{1}{6} + 2\frac{1}{2} =$ _____

6. Explain how you solved Problem 5b.

Name Date Time

Subtracting Mixed Numbers

Example: $8\frac{1}{4} - 2\frac{1}{2} = 5\frac{3}{4}$

Subtract. Write your answers in simplest form. Show your work.

1. $4\frac{3}{4} - 1\frac{1}{4}$

2. $4\frac{4}{5} - 1$

3. $7\frac{1}{6} - 2\frac{2}{6}$

4. $6 - \frac{1}{3} =$ _____

5. $5 - 3\frac{3}{5} =$ _____

6. $7\frac{1}{2} - 3\frac{3}{4} =$ _____

7. $4\frac{5}{6} - 3\frac{1}{3} =$ _____

8. $8\frac{2}{3} - 2\frac{1}{4} =$ _____

9. $7\frac{1}{3} - 4\frac{5}{6} =$ _____

10. $9\frac{3}{8} - 5\frac{3}{4} =$ _____

11. $6\frac{1}{2} - 1\frac{5}{8} =$ _____

Name: _____ Date: _____ Time: _____

Subtracting Mixed Numbers

1. Add. Write your answers as fractions in simplest form.

a. $\frac{1}{2} + \frac{2}{3} =$ _____

b. $\frac{3}{8} + \frac{3}{4} =$ _____

2. Subtract. Write your answers as fractions in simplest form.

a. $\frac{3}{8} - \frac{1}{4} =$ _____

b. $\frac{11}{12} - \frac{1}{3} =$ _____

3. Subtract. Write your answers in simplest form. Show your work.

a. $4\frac{5}{6} - 1\frac{1}{2} =$ _____

b. $7\frac{1}{8} - 5\frac{3}{4} =$ _____

4. Subtract. Write your answers in simplest form. Show your work.

a. $3\frac{4}{5} - 1\frac{1}{10} =$ _____

b. $4 - 3\frac{7}{8} =$ _____

5. Subtract. Write your answers in simplest form. Show your work.

a. $6\frac{1}{4} - 2\frac{5}{8} =$ _____

b. $5\frac{4}{5} - 3\frac{1}{2} =$ _____

6. Explain how you solved Problem 5b.

Name Date Time

Subtracting Mixed Numbers to Solve Number Stories

Example: Tina wants to jog $8\frac{1}{4}$ miles this week. So far, she has jogged $3\frac{2}{3}$ miles. How many more miles does she need to jog?

$4\frac{7}{12}$ miles

Solve the problem. Show your work.

1. Isaac would like to practice the violin $8\frac{1}{2}$ hours this week. So far, he has practiced $5\frac{3}{4}$ hours. How many more hours does he need to practice this week?

2. Carlie buys 10 feet of ribbon. She uses $2\frac{7}{8}$ feet. How much ribbon is left?

3. Sammy needs $3\frac{1}{4}$ cups of red beans. He has $1\frac{3}{4}$ cups. How much more does he need?

4. Carla bought $4\frac{1}{2}$ gallons of milk. During the week, she used $2\frac{3}{4}$ gallons. How many gallons of milk are left?

5. Stephanie wants to ride her bike $5\frac{3}{8}$ miles to the park. If she rides $3\frac{1}{2}$ miles, how many more miles does she have to ride?

Name Date Time

Using Fractions to Find the Unit Whole

1. Two friends cut a pan of cornbread into equal pieces. Hannah ate $\frac{1}{4}$ of the pieces. Nigel ate $\frac{1}{3}$ of the remaining pieces. Four pieces were left over.

   a. How many pieces was the cornbread divided into? _____ pieces

   b. Explain how you got your answer. Include a drawing and number models as part of your explanation.

2. In art class, a sheet of paper was cut into equal pieces. Cole used $\frac{3}{5}$ of the pieces. Ivy used $\frac{1}{2}$ of the remaining pieces. There were 3 pieces of paper left over.

   a. How many pieces was the paper divided into? _____ pieces

   b. Explain how you got your answer. Include a drawing and number models as part of your explanation.

Name Date Time

Using Division to Rename Fractions as Decimals and Percents

Fill in the table. You may use a calculator. Study the first problem.

Fraction	Decimal (Quotient)	Percent	Percent (to the nearest whole)
$\frac{1}{9}$	0.1111111111	11.11111111%	11%
$\frac{2}{3}$			
$\frac{3}{7}$			
$\frac{5}{9}$			
$\frac{7}{1}$			
$\frac{7}{8}$			
$\frac{1}{3}$			
$\frac{5}{7}$			
$\frac{5}{6}$			
$\frac{1}{12}$			
$\frac{3}{13}$			

Name: _____ Date: _____ Time: _____

Using Division to Rename Fractions as Decimals and Percents

1. Solve. Show your work.

198.6 / 3 = _____

2. Solve. Show your work.

277.2 ÷ 5 = _____

3. Divide using a calculator to fill in the table. Study the first problem.

Fraction	Decimal (Quotient)	Percent	Percent (to the nearest whole)
$\frac{5}{7}$	0.7142857143	71.42857143%	71%
$\frac{7}{9}$			
$\frac{4}{7}$			
$\frac{1}{3}$			
$\frac{8}{1}$			
$\frac{3}{4}$			

Name _____ Date _____ Time _____

Multiplying with Mixed Numbers to Solve Real-World Problems

Example:

The rug is $3\frac{3}{4}$ ft by $2\frac{2}{3}$ ft. What is its area? $10\ ft^2$

Converting Mixed Numbers to Fractions

$$3\tfrac{3}{4} * 2\tfrac{2}{3} = \tfrac{15}{4} * \tfrac{8}{3}$$
$$= \tfrac{15 * 8}{4 * 3}$$
$$= \tfrac{120}{12} = 10$$

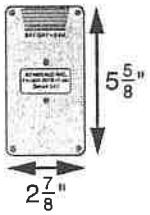
Solve the following fraction and mixed-number multiplication problems. Show your work.

1. $2\frac{1}{2} * 3\frac{2}{5} =$ _____

2. $10\frac{1}{2} * \frac{3}{4} =$ _____

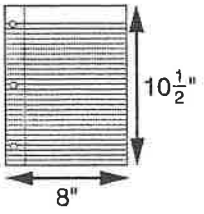
3. The back of Jena's calculator measures $5\frac{5}{8}$ in. by $2\frac{7}{8}$ in. What is the area of the back?

_____ $in.^2$



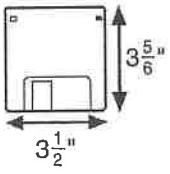
4. Each sheet of paper is $10\frac{1}{2}$ in. long by 8 in. wide. How much space does a sheet of paper have?

_____ $in.^2$



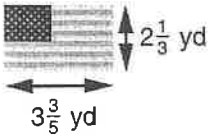
5. The computer disk is $3\frac{5}{6}$ in. tall by $3\frac{1}{2}$ in. wide. What is the area of the disk?

_____ $in.^2$



6. A flag is $2\frac{1}{3}$ yd tall by $3\frac{3}{5}$ yd wide. What is the area of the flag?

_____ yd^2



7. Is the flag's area greater or less than that of your desk? _____

Name: _____ Date: _____ Time: _____

Multiplying with Mixed Numbers to Solve Real World Problems

1. Multiply. Write your answers in simplest form.

a. $\frac{5}{8} * \frac{3}{4} =$ _____

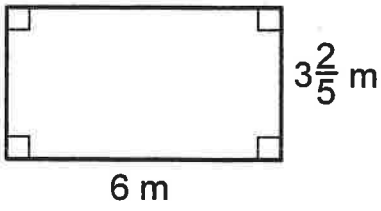
b. $\frac{7}{10} * \frac{2}{3} =$ _____

2. Multiply. Write your answers in simplest form.

a. $1\frac{1}{3} * 2\frac{1}{4} =$ _____

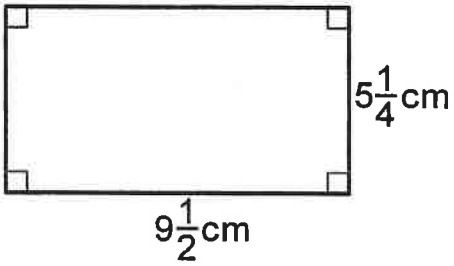
b. $3\frac{2}{5} * 2\frac{1}{2} =$ _____

3. Find the area of the rectangle shown below.



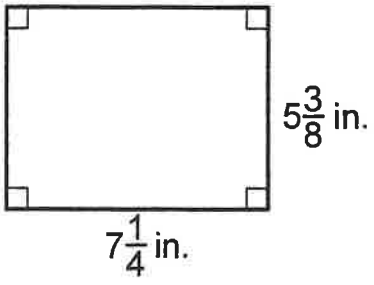
Area = _____

4. Find the area of the rectangle shown below.



Area = _____

5. Find the area of the rectangle shown below.



Area = _____

6. Describe the strategy you used to find the area in Problem 5.

Name _____ Date _____ Time _____

Multiplying with Mixed Numbers to Solve Problems

Use the information in the table to help you find the area of each photograph.

Example: What is the area of the album page?

$60\frac{3}{4}$ $in.^2$.

	Height	Width
Album page	$6\frac{3}{4}''$	$9''$
Photograph A	$2\frac{1}{8}''$	$2\frac{3}{4}''$
Photograph B	$3\frac{5}{8}''$	$4''$
Photograph C	$4\frac{1}{8}''$	$2\frac{1}{2}''$
Photograph D	$2\frac{1}{8}''$	$2\frac{1}{8}''$

1. What is the area of photograph A?

_____.

2. What is the area of photograph B?

_____.

3. What is the area of photograph C?

_____.

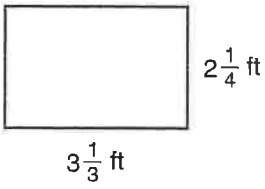
4. What is the area of photograph D?

_____.

Use the formulas below to help you find the area of each figure below.

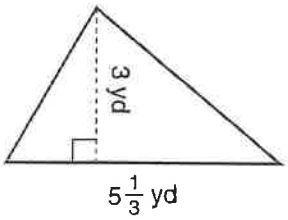
Area of a rectangle	Area of a triangle	Area of a parallelogram
$A = b * h$	$A = \frac{1}{2} * b * h$	$A = b * h$

5.



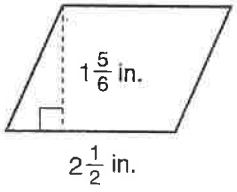
Area = _____ (unit)

6.



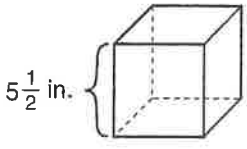
Area = _____ (unit)

7.



Area = _____ (unit)

8. Jon made a cubic box out of cardboard.
What is the area of all the cardboard he used?



Area = _____ (unit)

Name: _____ Date: _____ Time: _____

Multiplying with Mixed Numbers to Solve Problems

1. Multiply. Write your answers in simplest form.

a. $3\frac{1}{4} * 1\frac{1}{2} =$ _____

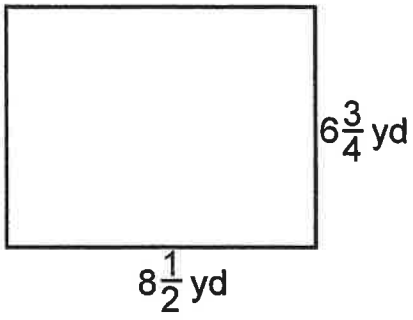
b. $1\frac{5}{6} * 2\frac{2}{3} =$ _____

2. Multiply. Write your answers in simplest form.

a. $2\frac{1}{2} * 3\frac{2}{5} =$ _____

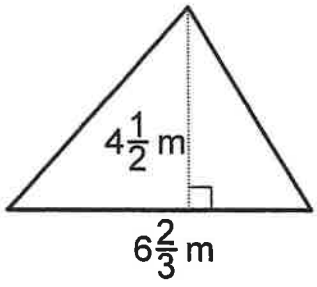
b. $1\frac{5}{8} * 2\frac{1}{3} =$ _____

3. Find the area of the rectangle shown below.



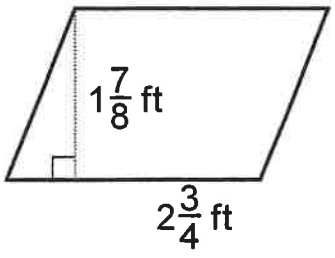
Area = _____

4. Find the area of the triangle shown below.



Area = _____

5. Find the area of the parallelogram shown below.



Area = _____

6. Explain how you found the answer in Problem 5.

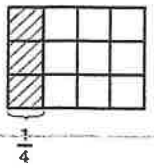
Name Date Time

Shading Squares to Find a Fraction of a Fraction

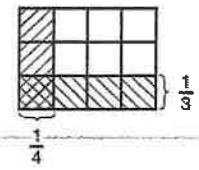
You can use an area model to find a product.

Example: $\frac{1}{4} * \frac{1}{3}$

Shade $\frac{1}{4}$ of the grid this way:



Shade $\frac{1}{3}$ of the grid this way:



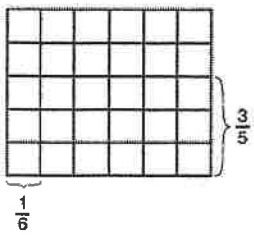
The product is the area that is double-shaded.

Since $\frac{1}{12}$ of the grid is double-shaded,

$\frac{1}{4} * \frac{1}{3} = \frac{1}{12}$.

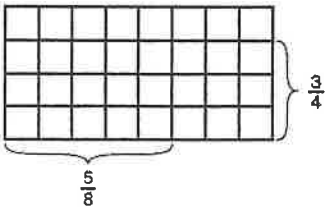
Shade each factor and then find the product.

1.



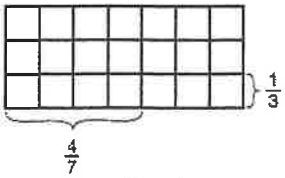
$\frac{1}{6} * \frac{3}{5} = \frac{\square}{30}$

2.



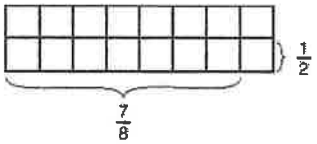
$\frac{3}{4} * \frac{5}{8} = \frac{\square}{\square}$

3.



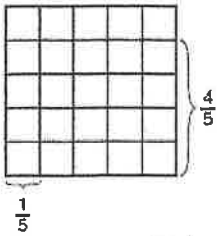
$\frac{1}{3} * \frac{4}{7} = \frac{\square}{21}$

4.



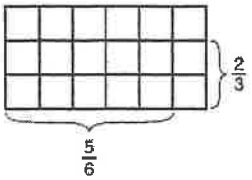
$\frac{7}{8} * \frac{1}{2} = \frac{\square}{\square}$

5.



$\frac{1}{5} * \frac{4}{5} = \frac{\square}{25}$

6.



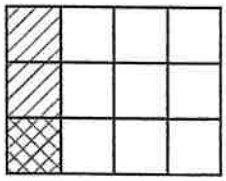
$\frac{2}{3} * \frac{5}{6} = \frac{\square}{\square}$

Name Date Time

Using Visual Models to Divide Unit Fractions by Whole Numbers

Use the visual models to help you divide.

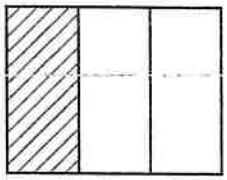
Example: Three family members equally share $\frac{1}{5}$ of a loaf of corn bread. How much of the loaf of corn bread will each person get?



Each person will get $\frac{1}{15}$ of the loaf.

$\frac{1}{5} \div 3 = \frac{1}{15}$

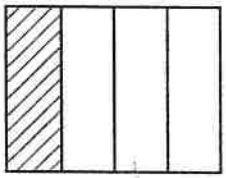
1. Two friends equally share $\frac{1}{3}$ of a granola bar. Divide the rectangle at the right to show how much of the bar each friend will get.



Each friend will get _____ of the granola bar.

$\frac{1}{3} \div 2 =$ _____

2. Three girls equally share $\frac{1}{4}$ of a lasagna. Divide the rectangle at the right to show how much lasagna each girl will get.



Each girl will get _____ of the lasagna.

$\frac{1}{4} \div 3 =$ _____

3. When you divide a unit fraction (less than 1) by a whole number, is the quotient larger or smaller than the fraction? Explain.

_____

_____

_____

4. Describe a problem situation that you could solve by dividing $\frac{1}{2} \div 4$. Draw a visual model to show the division. Write a number model to summarize your problem.

_____

_____

_____

_____

_____

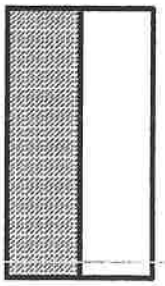
Number model: _____

Name: _____ Date: _____ Time: _____

Using Visual Models to Divide Unit Fractions by Whole Numbers

1. Five students equally share $\frac{1}{2}$ of the garden.

How much of the garden does each student get?

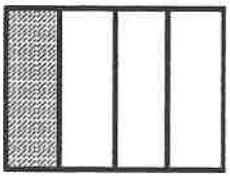


Each student will get _____ of the garden.

$\frac{1}{2} \div 5 =$ _____

2. In the morning, three workers will equally divide $\frac{1}{4}$ of the windows to wash.

What fraction of the windows will each worker wash?



Each worker will wash _____ of the building's windows.

$\frac{1}{4} \div 3 =$ _____

3. Describe a problem situation that you could solve by dividing $\frac{1}{3}$ by 5.

_____

_____

Draw a model to the right to show the division.

Write a number sentence to summarize your problem.

_____

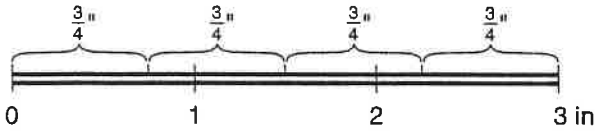
Name Date Time

Using a Line Segment to Divide a Whole Number by a Fraction

Use the line segment to show how to divide a whole number by a fraction.

Example: How many $\frac{3}{4}$-inch pieces of string can you cut from a piece of string that is

3 inches long? 4 pieces



1. How many $\frac{1}{4}$-inch pieces of string can you cut from a piece that is

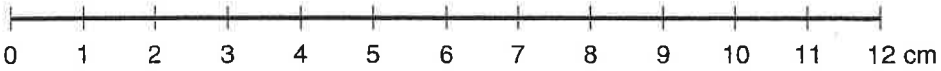
4 inches long? _____

2. How many $\frac{1}{2}$-inch pieces of string can you cut from a piece that is

3 inches long? _____

3. How many $\frac{3}{4}$-centimeter pieces of string can you cut from a piece that is

12 centimeters long? _____



Division of Fractions Algorithm

$$\frac{a}{b} \div \frac{c}{d} = \frac{a}{b} * \frac{d}{c}$$

Divide. Show your work. Write your answers in simplest form.

4. $\frac{1}{8} \div \frac{5}{6} =$ _____

5. $\frac{3}{7} \div \frac{2}{3} =$ _____

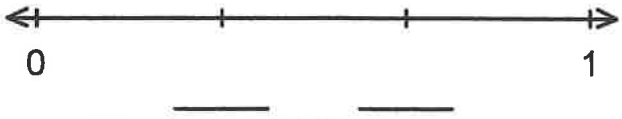
6. $\frac{3}{8} \div \frac{3}{5} =$ _____

7. $\frac{7}{12} \div \frac{8}{5} =$ _____

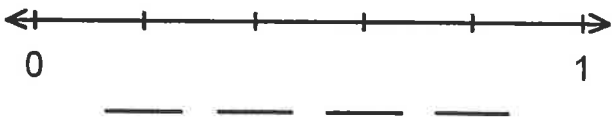
Name: _____ Date: _____ Time: _____

Using a Line Segment to Divide a Whole Number by a Fraction

1. Fill in the missing fractions on the number line.



2. Fill in the missing fractions on the number line.



3. How many $\frac{1}{4}$-inch pieces of string can you cut from a piece that is 3 inches long? _____

4. How many $\frac{1}{3}$-inch pieces of string can you cut from a piece that is 3 inches long? _____

5. How many $\frac{3}{5}$-inch pieces of string can you cut from a piece that is 3 inches long? _____

6. Explain how you found the answer in Problem 5.

5th Grade: Measurement and Data

Convert like measurement units within a given measurement system.
CCSS.Math.Content.5.MD.A.1
Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Represent and interpret data.
CCSS.Math.Content.5.MD.B.2
Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*

Geometric measurement: understand concepts of volume.
CCSS.Math.Content.5.MD.C.3
Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
CCSS.Math.Content.5.MD.C.3.a
A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.
CCSS.Math.Content.5.MD.C.3.b
A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.
CCSS.Math.Content.5.MD.C.4
Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
CCSS.Math.Content.5.MD.C.5
Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
CCSS.Math.Content.5.MD.C.5.a
Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.
CCSS.Math.Content.5.MD.C.5.b
Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.
CCSS.Math.Content.5.MD.C.5.c
Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.

Name: _____ Date: _____ Time: _____

Equivalent Units of Capacity

1. Complete.

a. _____ cups = $\frac{1}{2}$ pint

b. 1 pint = _____ cups

2. a. How many quarts are in 1 gallon?

_____ quarts

b. How many cups are in 1 quart?

_____ cups

3. a. How many pints are in 1 quart?

_____ pints

b. How many cups are in 1 gallon?

_____ cups

4. Complete.

a. _____ pints = 1 half-gallon

b. 1 gallon = _____ pints

5. Draw a picture to show how many cups are in a half-gallon.

Name: _____ Date: _____ Time: _____

Converting Units of Length

1. Complete.

a. 1 mile = _____ feet

b. 1 foot = _____ inches

c. _____ feet = 1 yard

2. Complete.

a. 2 yards = _____ feet

b. _____ feet = 3 yards

c. _____ inches = 2 feet

3. Complete.

a. 12 in. = _____ ft

b. 60 in. = _____ ft

c. 33 ft = _____ yd

4. Complete.

a. 5 mi = _____ ft

b. _____ ft = 1 yd

c. 48 in. = _____ ft

5. How many inches are in 5 yards?

a. Explain how you would solve the problem.

_____

_____

_____

_____

b. Solve the problem.

Name _____ Date _____ Time _____

Completing Conversion Tables for U.S. Customary Units

1. Record length measurement equivalents in the two-column tables below.

a.

Feet	Inches
1	
2	
3	
7	
	108

b.

Yards	Feet
1	
2	
3	
4	
	24

c.

Yards	Inches
1	36
3	
	180
7	
10	

2. Record weight measurement equivalents in the two-column tables below.

a.

Pounds	Ounces
1	
2	
5	
8	
	240

b.

Tons	Pounds
1	
	4,000
3	
	8,000
5	

c.

Tons	Ounces
1	32,000
2	
	96,000
	128,000
5	

3. Record capacity measurement equivalents in the two-column tables below.

a.

Quarts	Pints
1	2
	6
	8
6	
10	

b.

Gallons	Quarts
1	
	12
5	
	28
9	

c.

Gallons	Pints
1	
	40
10	
15	
	160

Name: _____ Date: _____ Time: _____

Completing Conversion Tables for U.S. Customary Units

1. Complete.

_____ inches = 1 yard

1 pound = _____ ounces

1 foot = _____ inches

_____ cups = 1 quart

1 gallon = _____ pints

2. Complete the table.

pounds	ounces
1	
	48
7	
	128
12	

3. Complete the table.

quarts	gallons
4	
	6
36	
60	
	21

4. Complete the table.

yards	inches
	36
	72
8	
12	
	540

Name _____ Date _____ Time _____

Line Plots with Fractions of a Unit

The table below shows rainfall for 12 days in one particular city. Organize the data in a line plot.

Rainfall Data

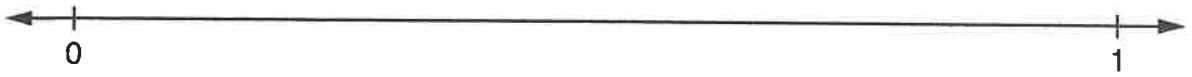
Day	1	2	3	4	5	6	7	8	9	10	11	12
Rainfall (in.)	$\frac{3}{8}$	$\frac{1}{2}$	0	0	$\frac{1}{8}$	$\frac{5}{8}$	$\frac{3}{4}$	0	0	0	$\frac{3}{4}$	$\frac{1}{2}$

1. Label the approximate locations on the line plot for $\frac{1}{8}$, $\frac{2}{8}$, $\frac{3}{8}$, $\frac{4}{8}$, $\frac{5}{8}$, $\frac{6}{8}$, and $\frac{7}{8}$.

2. Plot the rainfall data from the table.

Rainfall Data

Number of Days



Rainfall (in.)

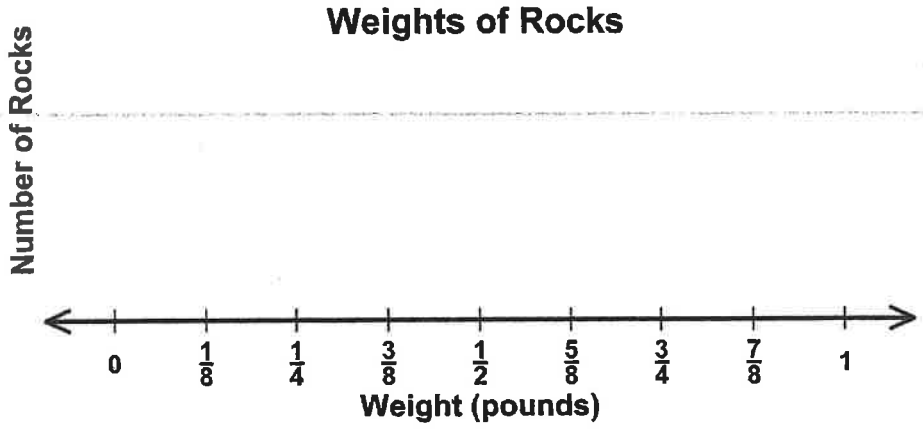
Name: _____ Date: _____ Time: _____

Line Plots with Fractions of a Unit

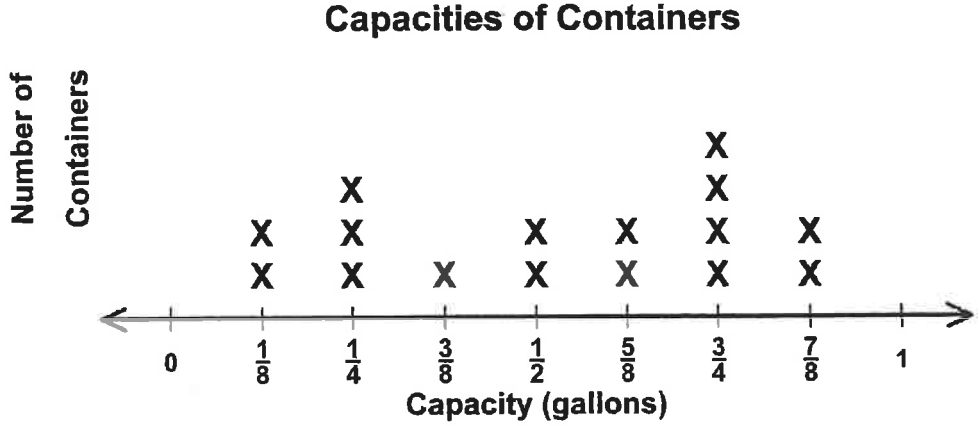
1. Jason measured the weights of rocks for his science class. The weights (in pounds) are represented by the following data set:

$\frac{3}{4}, \frac{7}{8}, \frac{3}{4}, \frac{7}{8}, \frac{7}{8}, \frac{3}{4}, \frac{1}{4}, \frac{1}{8}, \frac{3}{8}, \frac{3}{8}, \frac{1}{8}, \frac{3}{8}, \frac{1}{2}, \frac{1}{2}, \frac{5}{8}$

Construct a line plot to represent the data.



2. Amy sorted the containers she has in her kitchen. She recorded the capacities of the containers in the line plot shown below.



a. Which size container does she have the most of? _____ gallon

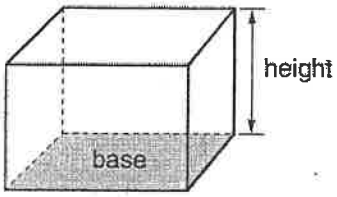
b. One gallon equals 128 ounces. How many total ounces will all of Amy's $\frac{7}{8}$-gallon containers hold?_____ ounces

Name _____ Date _____ Time _____

Using a Volume Formula for Rectangular Prisms

Write the formulas for the volume of a rectangular prism.

_____



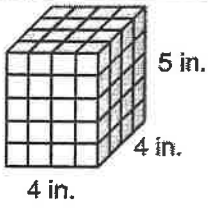
B is the area of the base ($l * w$).

h is the height from that base.

V is the volume of the prism.

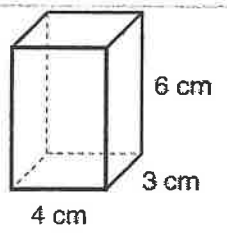
Find the volume of each rectangular prism below.

1.



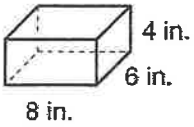
$V =$ 80 in^3 (unit)

2.



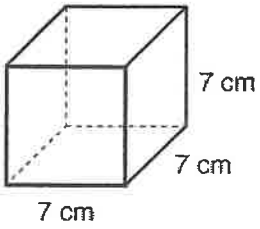
$V =$ _____ (unit)

3.



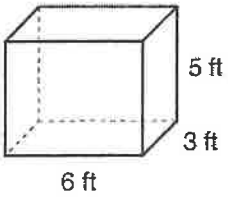
$V =$ _____ (unit)

4.



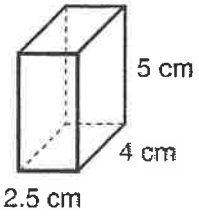
$V =$ _____ (unit)

5.



$V =$ _____ (unit)

6.



$V =$ _____ (unit)

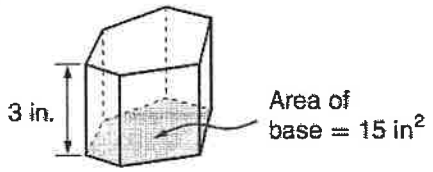
Name Date Time

Volume of Prisms with Known Bases

The volume V of any prism can be found with the formula $V = B * h$, where B is the area of the base of the prism, and h is the height of the prism from that base.

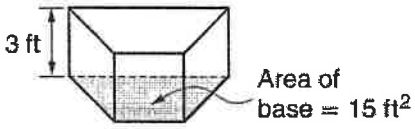
Find the volume of each prism.

Example:



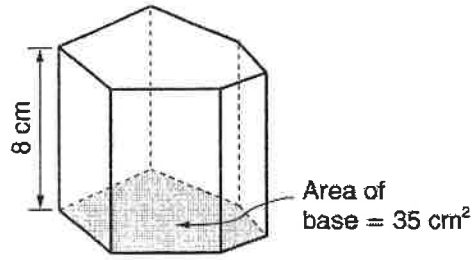
Volume = 45 in^3

1.



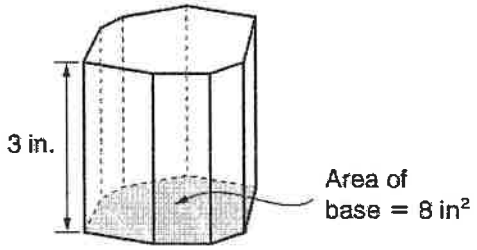
Volume = _____ ft^3

2.



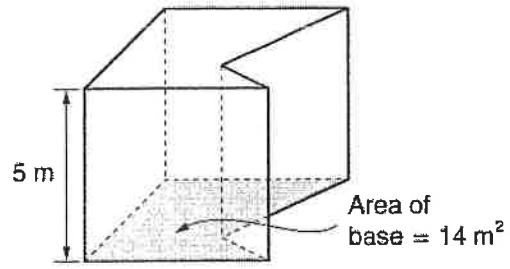
Volume = _____ cm^3

3.



Volume = _____ in^3

4.



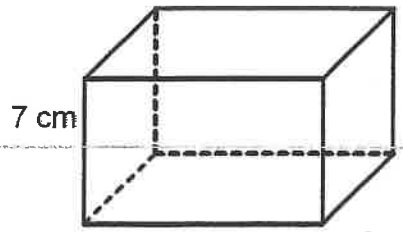
Volume = _____ m^3

Name: _____ Date: _____ Time: _____

Volume of Prisms with Known Bases

Find the volume of each prism. The area of the base is given for each prism. Show your work.

1. The prism below has a height of 7 cm. The area of its base is 72 cm^2.

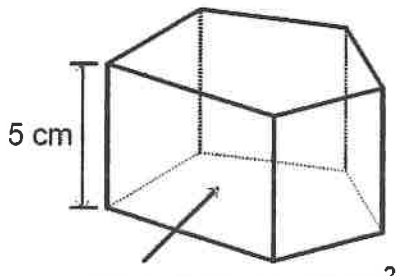


Area of Base = 72 cm^2

$V = B * h$

$V =$ _____

2. The prism below has a height of 5 cm. The area of its base is 23 cm^2.

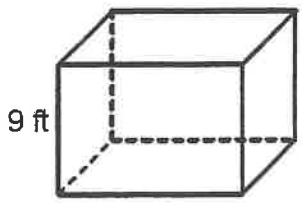


Area of Base = 23 cm^2

$V = B * h$

$V =$ _____

3. The prism below has a height of 9 ft. The area of its base is 52 ft^2.



Area of Base = 52 ft^2

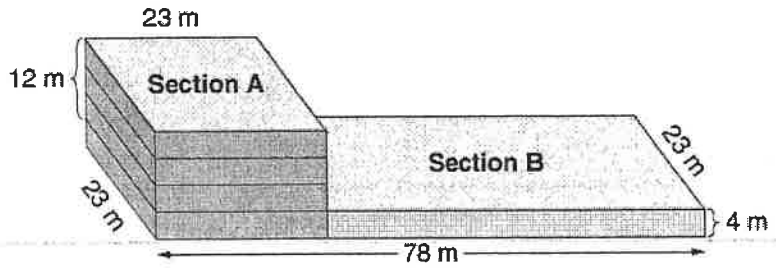
$V = B * h$

$V =$ _____

Name Date Time

Solving a Building Volume Problem

1. A building consists of two connected sections: a 4-story section (Section A; shaded in dark gray) and a 1-story section (Section B; shaded in light gray). Section A has a square base. Find the volume of each section of the building using one of these formulas: $V = B * h$ or $V = l * w * h$. Then find the total volume.



   a. The above sketch shows that the height of the top three floors of Section A is 12 m. What is the total height of Section A?

   _____

   b. Volume of Section A: _____

   c. The above sketch shows that the length of the entire first floor of the building is 78 m. What is the length of Section B?

   _____

   d. Volume of Section B: _____

   e. Total volume of the building: _____

2. Another way to find the volume of the building in Problem 1 is to find the volume of the entire first floor (of both sections) and then find the volume of the top three floors of Section A.

   a. What are the dimensions of the entire first floor?

   _____

   b. Total volume of the first floor: _____

   c. What are the dimensions of the top three floors?

   _____

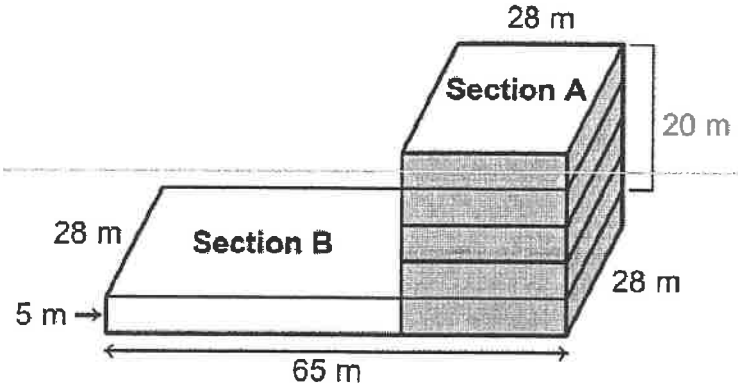
   d. Volume of the top three floors of Section A: _____

   e. Total volume of the building: _____

Name: _____ Date: _____ Time: _____

Solving a Building Volume Problem

1. A building consists of two connected sections: a 5-story section (Section A) and a 1-story section (Section B). Section A has a square base. Find the volume of each section of the building using one of the formulas below. Then find the total volume.



Volume formulas:

$V = B * h$

$V = l * w * h$

a. What is the total height of Section A? _____ (unit)

b. Volume of Section A: _____ (unit)

c. What is the length of Section B? _____ (unit)

d. Volume of Section B: _____ (unit)

e. Total volume of the building: _____ (unit)

2. Find the volume of the building in Problem 1 by finding the volume of the entire first floor (of both sections) and then by finding the volume of the top 4 floors of Section A.
Show your work. If you need room, use the back of the page.

Total volume of the building: _____ (unit)

5th Grade: Geometry

Graph points on the coordinate plane to solve real-world and mathematical problems.

CCSS.Math.Content.5.G.A.1
Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).

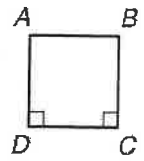
CCSS.Math.Content.5.G.A.2
Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Classify two-dimensional figures into categories based on their properties.
CCSS.Math.Content.5.G.B.3
Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.

CCSS.Math.Content.5.G.B.4
Classify two-dimensional figures in a hierarchy based on properties.

Name _____ Date _____ Time _____

Plotting Triangles and Quadrangles



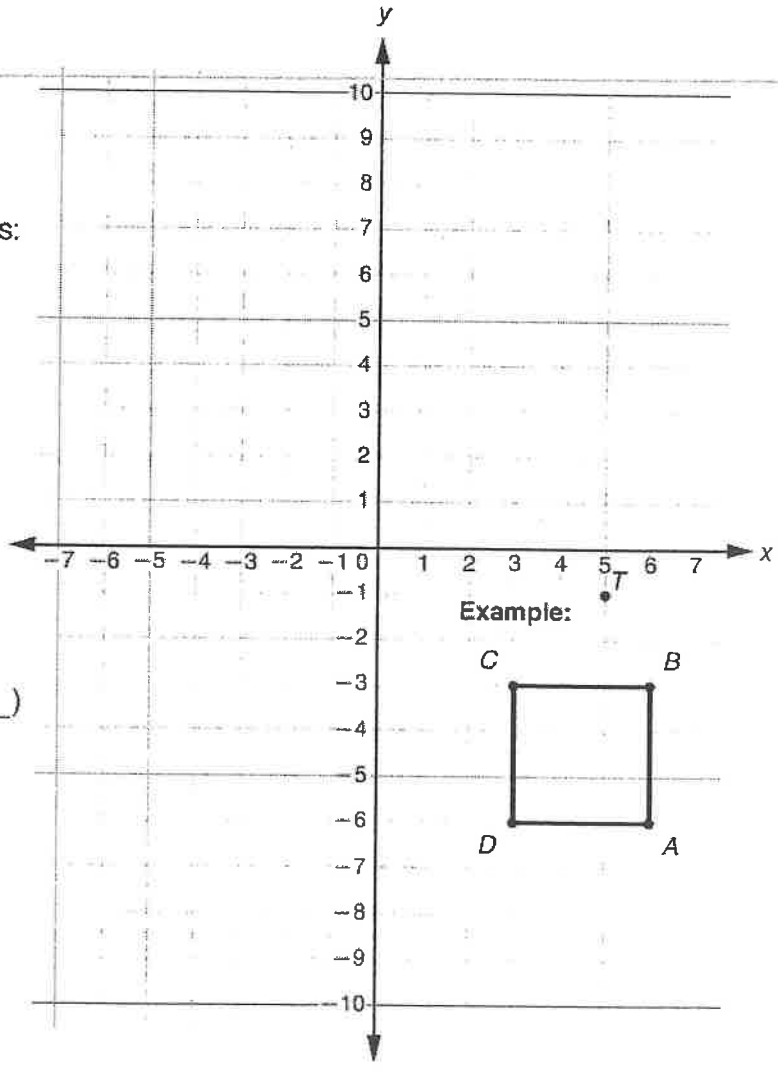
The names of polygons consist of letters that name the vertices, written in consecutive order. For example, the square at the right may be named square *ABCD, BCDA, CDAB,* or *DABC.*

The ordered pairs given in Problems 2–5 represent the vertices of a triangle or quadrangle. The coordinates for at least one vertex of each polygon is missing. Plot and label the given points and the missing point(s) and draw each polygon on the coordinate grid. Write the missing coordinates.

Example: Square *ABCD*

A: (6, −6), *B:* (6, −3), *C:* (3, −3),

D: (3, −6)



1. Use the coordinate grid to complete the following.

a. Plot and label the following points: *R:* (0, 10), *S:* (−2, 7), *T:* (5, 7)

b. Draw the line segments to connect the points as follows: *R* to *S*, *S* to *T*, and *T* to *R*.

c. Describe the figure you have drawn.

_____

Example:

2. Triangle *HIJ* with all positive coordinates less than 7

H: (2, 2), *I:* (4, 6), *J:* (_____, _____)

3. Triangle *KLM* with one side on the *y*-axis and with negative *y*-coordinates

K: (0, −2), *L:* (−4, −6),

M: (_____, _____)

4. Square *NOPQ* with one side on the *x*-axis and with negative *x*-coordinates

N: (−3, 0), *O:* (−3, −3), *P:* (_____, _____), *Q:* (_____, _____)

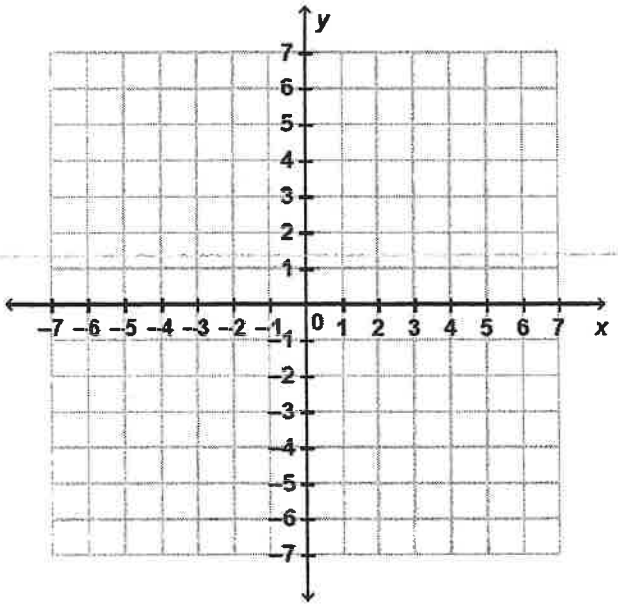
5. Rhombus *DEFG* with all negative *x*-coordinates

D: (−4, 2), *E:* (−6, 3), *F:* (−4, 4), *G:* (_____, _____)

Name: _____ Date: _____ Time: _____

Plotting Triangles and Quadrangles

1. Plot and label the given coordinates. Then plot and label the missing point to complete the quadrangle described.



A rectangle:

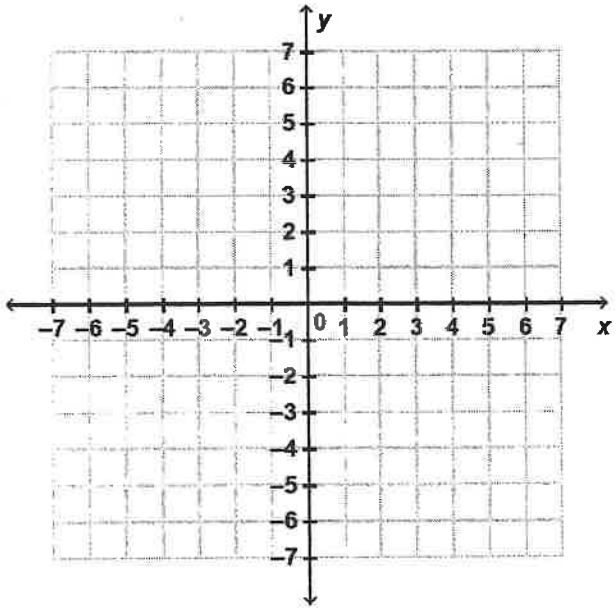
P: (4,2)

R: (–4,2)

A: (–4,–2)

C: (_____,_____)

2. Plot and label the given coordinates. Then plot and label the missing point to complete the triangle described.



A triangle with a negative *x*-coordinate:

L: (2,–3)

Z: (0,4)

U: (_____,_____)

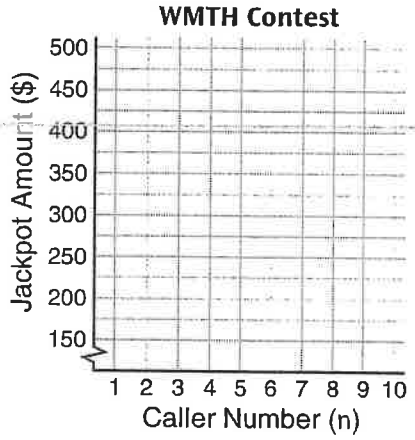
Name Date Time

Using Graphs and Formulas to Make Predictions

Radio station WMTH has a contest in which listeners call in to win money. The contest begins with a $200 jackpot. One caller each hour can win the jackpot by correctly answering a math question. If the caller does not give a correct answer, $25 is added to the jackpot for the next hour.

1. Some available jackpot amounts for callers appear in the table below. Complete the table. Then graph the data values from the table.

Caller Number (*n*)	Jackpot Amount ($)
1	200
2	225
3	
	275
5	



2. Suppose you were the eighth caller to WMTH and you answered correctly. Extend your graph to predict the amount of money you would win. _____

3. The formula $(n - 1) * \$25 + \$200$ can be used to express the jackpot amount for any caller. Use this formula to complete the table below. Refer to page 247 of the *Student Reference Book* if you need to review the order of operations.

Rule: $(n - 1) * \$25 + \$200$

in	out
n	$(n - 1) * \$25 + \$200$
2	$225
4	
15	
	$825
101	

4. Predict the number of the caller who would win a jackpot of $1,000,000. Use the formula $(n - 1) * \$25 + \$200$ to check your prediction.

_____

Name: _____ Date: _____ Time: _____

Using Graphs and Formulas to Make Predictions

1. Complete the "What's my Rule?" tables and write the rules.

a.

Rule

in	out
6	24
	36
30	120
	60

b.

Rule

in	out
45	
88	68
	78
52	32

c.

Rule

in	out
48	
64	8
240	30
560	

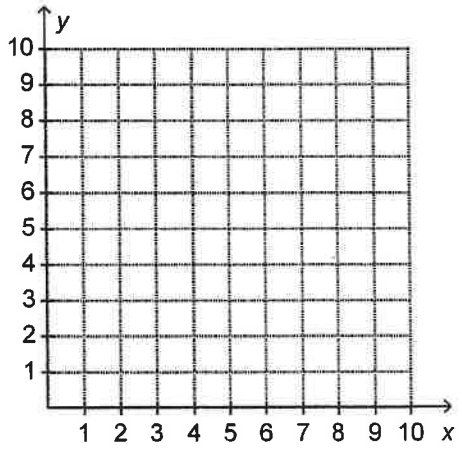
2. Complete the table for the given rule.

Then plot and connect the points to make a line graph.

Rule:

$y = (\frac{1}{2} * x) + 4$

in	out
x	y
0	4
1	
2	5
	6



3. Extend the graph for Problem 2 to predict the value for y when $x = 6$.

When $x = 6$, $y =$ _____

4. Explain your answer for Problem 3.

_____

_____

_____

Name _____ Date _____ Time _____

Finding Sums of Angle Measures in Triangles

1. Cut out one of the triangles on *Angle Measures of Triangles*. Carefully cut or tear off each angle. Use point *P* at the right to position the angles so they touch but do not overlap. The shaded regions should form a semicircle. Use tape or glue to hold the angles in place.

P

2. Notice that the combined shaded regions form an angle.

   What type of angle have you formed? _____

   How many degrees does this angle measure? _____

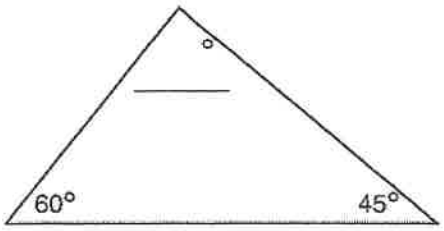
3. Compare your results with those of other students. What do your triangles seem to have in common?

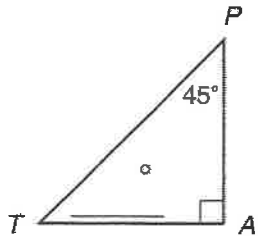
   _____

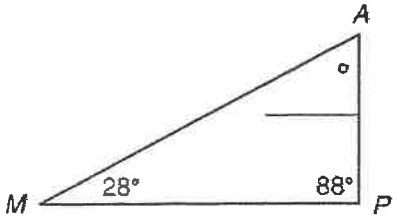
   _____

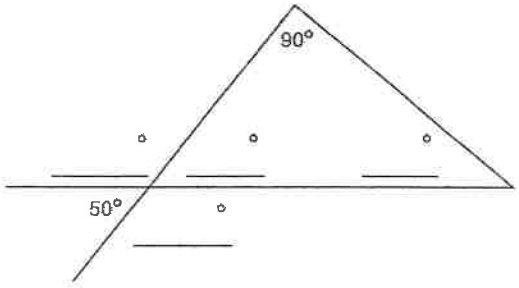
4. Complete the following statement.
   The sum of the measures of the angles of any triangle is _____°.

Find the missing angle measures. Do not use a protractor.

5. 

6. 

7. 

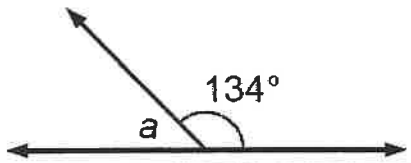
8. 

Name: _____ Date: _____ Time: _____

Finding Sums of Angle Measures in Triangles

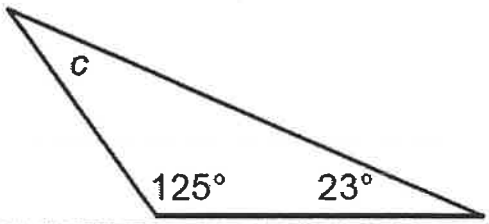
Find each missing angle measure. Do not use a protractor.
(Note: m∠*a* is short for *the measure of angle* a.)

1.



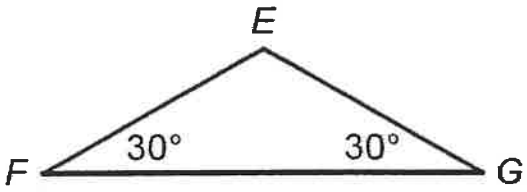
m∠*a* = _____

2.



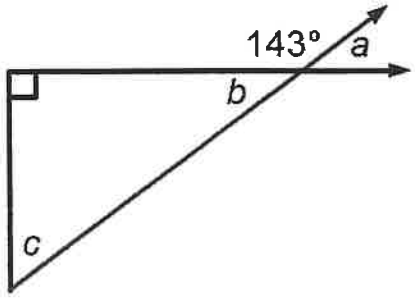
m∠*c* = _____

3.



m∠*E* = _____

4.



m∠*a* = _____

m∠*b* = _____

m∠*c* = _____

5. Explain how you found the measure of ∠*c* in Problem 4.

Name: _____ Date: _____ Time: _____

Classifying Quadrilaterals

1. Draw a quadrilateral that is not a rectangle, not a kite, and not a parallelogram.

2. What are the four types of quadrilaterals that have two pairs of parallel sides?

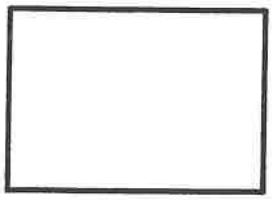
_____

_____

_____

_____

3. There may be more than one correct name for this geometric figure. Identify three different names.



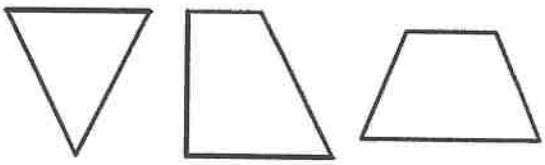
_____

_____

_____

4. This is an isosceles triangle.

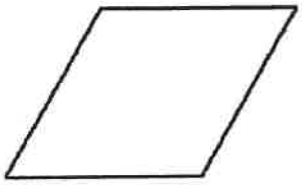
Which of these is an isosceles trapezoid? Circle your answer.



Name: _____ Date: _____ Time: _____

Classifying Quadrilaterals

1. There may be more than one correct name for this geometric figure. Identify the correct names.



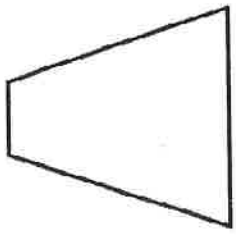
Ⓐ polygon, quadrilateral

Ⓑ polygon, quadrilateral, rectangle, rhombus, square

Ⓒ polygon

Ⓓ polygon, quadrilateral, parallelogram, rhombus

2. There may be more than one correct name for this geometric figure. Identify the correct names.



Ⓐ polygon, quadrilateral, rhombus, square

Ⓑ polygon, quadrilateral, trapezoid

Ⓒ polygon, quadrilateral

Ⓓ polygon, quadrilateral, parallelogram