Name _____ Date _____ Class _____

SECTION 1A

Ready to Go On? Skills Intervention

1-1 Variables and Expressions

Find these vocabulary words in Lesson 1-1 and the Multi-Language Visual Glossary.

Vocabulary		
variable	constant	numerical expression
algebraic expression		evaluate

Translating from Algebra to Words

Give two ways to write each algebraic expression in words.

A. $8 + k$

Identify the constant in the expression. _____

Identify the variable in the expression. _____

Name two words that mean the same thing as the + symbol. _____ _____

Write the expression $8 + k$ in words: the _____ of 8 and k OR k added to ____.

B. $\frac{c}{4}$

What operation does the fraction bar indicate? _____

Identify the divisor in the expression. _____ Identify the dividend. _____

When you find the answer to a division problem you find the _____.

Write the expression $\frac{c}{4}$ in words: c _____ by 4 OR the quotient of ____ and ____.

Evaluating Algebraic Expressions

Evaluate each expression for $x = 6$, $y = 5$, and $z = 2$.

A. xy

What operation is indicated by the expression? _____

What value should you substitute for x? _____ for y? _____

Rewrite the expression using the substituted values. (___)(___) Simplify. _____

B. $x - z$

What operation is indicated by the − symbol? _____

What value should you substitute for x? _____ for z? _____

Rewrite the expression using the substituted values. ___ − ___ Simplify. _____

Name _____ Date _____ Class _____

SECTION 1A

Ready to Go On? Problem Solving Intervention

1-1 Variables and Expressions

An algebraic expression contains variables, constants, and operations. A variable is a letter or symbol used in an expression to represent a value that can change, like *x*, and a constant is a value that does not change, like 3.

A swimmer is competing in a 50-lap race. Write an expression for the number of laps left after the swimmer has completed *c* laps.

Understand the Problem

1. How many laps is the race? _____

2. What variable represents the number of laps? _____

3. What are you being asked to do?

_____

Make a Plan

4. The phrase *number of laps left* corresponds to which operation symbol? _____

5. Identify the constant in the problem. _____

6. Identify the variable in the problem. _____

Solve

7. What value should be written first in the expression, the constant or the variable? Why?

_____

8. Write an expression for the number of laps left after the swimmer has completed *c* laps. ____ − *c*

Look Back

9. Think of a simpler problem: The race is 50 laps. If you swim 20 laps, how many laps will be left? _____

10. Now use your expression to determine the following: If the swimmer has completed 20 laps, how many laps left does he have left to swim? ____ − 20 = ____

Is the number of laps left to swim more or less than 50 laps? _____

11. Does your expression represent the situation? Explain.

_____

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SECTION 1A

Ready to Go On? Skills Intervention

1-2 Adding and Subtracting Real Numbers

Find these vocabulary words in Lesson 1-2 and the Multi-Language Visual Glossary.

Vocabulary			
absolute value	opposites	additive inverse	real numbers

Adding Real Numbers

Add.

A. $52 + (-13)$

When you add two numbers with different signs, find the difference of their _____ and use the sign of the number with the _____ absolute value.

What is the absolute value of 52? ____ What is the absolute value of -13? ____

Find the difference of the absolute values of 52 and 13. ____

What is the sign on the number that has the greatest absolute value? _____

What is $52 + (-13)$? ____

B. $x + (-10)$ for $x = -12$

When you add two numbers with the same sign, _____ their absolute values and use the _____ of the numbers.

What value should you substitute for x? _____

Rewrite the expression using the substituted value. _____

What is the absolute value of -12? ____ What is the absolute value of -10? _____

Find the sum of the absolute values of -12 and -10. _____

What is the sign on the numbers? _____ What is $-12 + (-10)$? _____

Subtracting Real Numbers

Subtract $40 - 57$.

To subtract a number, _____ its opposite. What is the opposite of -57? _____

Rewrite the expression using the opposite, or additive inverse, of -57. _____

When the signs of the numbers are different, find the _____ of their absolute values.

What is $57 - 40$? _____

What is the sign on the number that has the greatest absolute value? _____

So, what is $40 - 57$? _____

Name _____ Date _____ Class _____

SECTION 1A

Ready to Go On? Problem Solving Intervention

1-2 Adding and Subtracting Real Numbers

To add or subtract numbers with the same sign, add the numbers and use the sign of the numbers. To add or subtract numbers with different signs, subtract the smaller number from the larger and use the sign of the larger number.

The outdoor temperature is currently −6°F. By midnight the temperature is predicted to increase 14°F. If the prediction is accurate, what will be the outdoor temperature at midnight?

Understand the Problem

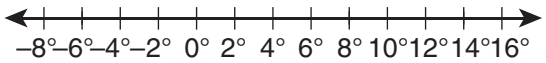
1. What is the current temperature? _____

2. What is the predicted temperature increase? _____

3. Should the predicted midnight temperature be less than or more than −6°F? _____

Make a Plan

4. Plot −6°F and 14°F on a number line.



5. What number is larger, −6 or 14? _____

6. What is the sign of the larger number? _____

7. Since the current temperature is predicted to increase, do you need to add or subtract the two temperatures to find the midnight temperature? _____

Solve

8. Find the sum. −6°F + 14°F = ? Remember: to add numbers with different signs, subtract the smaller number from the larger and use the sign of the larger number.

_____ − 6 = _____; So −6°F + 14°F = _____.

9. Is the sum positive or negative? How do you know?

_____

Look Back

10. Use the number line in Exercise 4 to help you check your answer. Plot your answer from Exercise 8 on the number line in Exercise 4.

11. How many degrees does the temperature have to increase to go from −6°F to 0°F? _____ How many degrees does the temperature have to increase to go from 0°F to the point you just plotted? _____

Add these two values ____ + ____ = ____; If the sum is 14, your answer checks.

Name _____ Date _____ Class _____

SECTION 1A

Ready to Go On? Skills Intervention

1-3 Multiplying and Dividing Real Numbers

Find these vocabulary words in Lesson 1-3 and the Multi-Language Visual Glossary.

Vocabulary	
reciprocal	multiplicative inverse

Multiplying and Dividing Signed Numbers

Find the value of the expression $5(-8)$.

If two numbers have the same sign, their product or quotient is _____.

If two numbers have different signs, their product or quotient is _____.

Are the signs in the expression $5(-8)$ the same or different? _____

So, what is the product of $5(-8)$? _____

If the expression were changed to $-5(-8)$, is the product positive or negative? _____

Dividing by Fractions

Divide $-14 \div \frac{7}{9}$.

Two numbers are reciprocals if their product is _____.

If you switch the numerator and the _____ of a fraction, you get the reciprocal of that number. What is the reciprocal of $\frac{7}{9}$? $\frac{\square}{\square}$

$-14 \div \frac{7}{9}$

$= -14 \cdot \frac{9}{\square}$ Multiply by the reciprocal.

$= \frac{\square}{\square}$ Multiply the numerator. Multiply the denominator.

$=$ _____ Simplify. The signs are different, so the quotient is _____.

Multiplying and Dividing with Zero

Divide $80.2 \div 0$.

The product of any number and 0 is _____.

The quotient of 0 and any nonzero number is _____.

Can you divide a number by zero? _____

$80.2 \div 0$ is the same as $\frac{80.2}{0}$.

So division by zero is _____.

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SECTION 1A

Ready to Go On? Problem Solving Intervention

1-3 Multiplying and Dividing Real Numbers

The product or quotient of two numbers with the same sign is positive.
The product or quotient of two numbers with different signs is negative.

The airplane Paul is traveling on averages 520 miles per hour. If the plane has been in the air for $3\frac{1}{2}$ hours, how far has the plane traveled?

Understand the Problem

1. What is the average rate of the plane? _____

2. How long has the plane been in the air? _____

3. What are you trying to determine? _____

4. What should be the units of your final answer? _____

5. Should your answer be more than or less than 520? How do you know?

_____

Make a Plan

6. To find distance, do you multiply or divide the rate and time? _____

7. Write the decimal equivalent of $3\frac{1}{2}$ hours. _____

8. Let d represent the distance traveled. Write an equation to represent the situation.

Rate of the plane	·	Time the plane has been in the air	=	Distance Traveled

_____ · _____ = d

Solve

9. Multiply. $520 \cdot$ _____ $= d$
_____ $= d$ How far has the plane traveled? _____

10. Is the product positive or negative? _____ How do you know? _____

Look Back

11. To check a multiplication problem, you can divide the _____ by either of the two factors.

12. Use division to check your answer. Substitute the value for d from Exercise 9.

$\frac{d}{520} = \frac{\square}{520}$ = ____; If the quotient is 3.5, your answer checks.

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SECTION 1A

Ready to Go On? Skills Intervention

1-4 Powers and Exponents

Find these vocabulary words in Lesson 1-4 and the Multi-Language Visual Glossary.

Vocabulary		
power	base	exponent

Evaluating Powers

Evaluate each expression.

A. $(-4)^4$

What is the base in the expression? ____

What is the exponent in the expression? ___

The exponent tells how many times the base is used as a factor.

Rewrite the expression using -4 as a factor _____ times.

_____ $\times$ _____ $\times$ _____ $\times$ _____

Is the product positive or negative? _____

_____ $\times$ _____ $\times$ _____ $\times$ _____ $=$ _____ So, $(-4)^4 =$ _____.

B. -6^2

What is the exponent in the expression? _____

Keeping in mind that the negative sign is *not* in parenthesis, what is the base in the expression? _____

Rewrite the expression as $-1 \times 6 \times$ ____. Is the product positive or negative? _____

$-1 \times 6 \times$ ____ $=$ _____ Simplify.

C. $\left(-\frac{1}{3}\right)^3$

What is the base in the expression? ___

What is the exponent in the expression? ____

Is the negative sign part of the base? _____ Why? _____

Use $\left(-\frac{1}{3}\right)$ as a factor _____ times. $\left(-\frac{1}{3}\right) \cdot \left(-\frac{1}{3}\right) \cdot \left(-\frac{1}{3}\right) =$ _____

Writing Powers

Write 125 as a power given the base of 5.

Check to see how many factors of 5's it takes to get a product of 125.

$5 \times 5 =$ _____; Does this equal 125? _____

$5 \times 5 \times 5 =$ _____; Does this equal 125? _____ Write the power: $5^{\square}$

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SECTION 1A

Ready To Go On? Skills Intervention

1-5 Roots and Real Numbers

Find these vocabulary words in Lesson 1-5 and the Multi-Language Visual Glossary.

Vocabulary			
square root	perfect square	real numbers	natural numbers
whole numbers	integers	rational numbers	
terminating decimal	repeating decimal	irrational numbers	

Finding Roots

Find each square root.

A. $\sqrt{64}$

A number multiplied by _____ to form a product is called a square root of that product.

What symbol is used to represent positive square roots? ____

What number multiplied by itself equals 64? $8 \cdot \_\_ = 64$

Complete: $\sqrt{64} = \sqrt{8 \cdot \_\_} = \_\_$

B. $-\sqrt{625}$

What symbol is used to represent negative square roots? _____

What number multiplied by itself equals 625? $25 \cdot \_\_\_ = 625$

What is the opposite of this value? _____

Complete: $-\sqrt{625} = -\sqrt{25 \cdot \_\_} = \_\_\_\_$

C. $\sqrt[3]{\frac{27}{64}}$

Complete: $\sqrt[3]{27} = \sqrt[3]{3 \cdot \_\_ \cdot \_\_} = \_\_$ Complete: $\sqrt[3]{64} = \sqrt[3]{4 \cdot \_\_ \cdot \_\_} = \_\_$

You can rewrite $\sqrt[3]{\frac{27}{64}}$ as $\frac{\sqrt[3]{27}}{\sqrt[3]{64}}$. So, $\frac{\sqrt[3]{27}}{\sqrt[3]{64}} = \frac{\sqrt[3]{3 \cdot \_\_ \cdot \_\_}}{\sqrt[3]{4 \cdot \_\_ \cdot \_\_}} = \_\_$

Classifying Real Numbers

A. $\sqrt{18}$

$\sqrt{18} = 4.242640687$

Since this number does not terminate nor repeat, it is _____.

B. $\frac{9}{11}$

$\frac{9}{11} = 0.818181\overline{81}$

Since this number can be written as a repeating decimal it is a _____.

Name _____ Date _____ Class _____

SECTION 1A

Ready To Go On? Problem Solving Intervention

1-5 Roots and Real Numbers

You can use square roots of perfect squares to help estimate the square roots of other numbers.

Angie is installing a window in the shape of a square. The window will cover 150 square feet. Find the length of a side of the square window to the nearest tenth of a foot.

Understand the Problem

1. What is the area of the window? _____

2. What is the shape of the window? _____

3. What are you trying to determine? _____

Make a Plan

4. What do you know to be true about the side lengths of a square? _____

5. If you know the area of the square how can you determine the length of the side of a square? $A = s^2$
$\sqrt{A} =$ _____

6. Is the area of the window a perfect square? _____ So, estimate to find the side length.

7. Find the two perfect squares that surround 150.

144		169
$\sqrt{144} =$ ___ $12^2 =$ ____	150	$\sqrt{169} = 13$ $13^2 = 169$

Solve

8. Find $\sqrt{144}$. _____ Find $\sqrt{169}$. _____

9. So the square root of 150 is between _____ and _____.

10. Guess 12.3: $12.3^2 =$ _____ This value is too _____. So $\sqrt{150}$ is _____ than 12.3.

11. Guess 12.2: $12.2^2 =$ _____ This value is too _____. So $\sqrt{150}$ is _____ than 12.2.

12. Because 150 is closer to _____ than _____, $\sqrt{150}$ is closer to _____ than _____.

13. What is the length of the side of the window to the nearest tenth of a foot? _____

Look Back

14. Substitute the value from Exercise 13 into the area formula from Exercise 5.
$A = s^2 = \square^2 =$ _____ Is your answer reasonable? _____