

Student Name: \_\_\_\_\_

Score: \_\_\_\_\_

**Mixed Review**

$$\frac{5}{12} + \frac{4}{5} = \square$$

$$\frac{9}{14} - \frac{3}{7} = \square$$

$$\frac{16}{22} \times \frac{33}{28} = \square$$

$$\frac{25}{32} \div 4\frac{3}{8} = \square$$

$$\frac{21}{4} + \frac{15}{11} = \square$$

$$\frac{11}{5} - \frac{4}{7} = \square$$

$$63 \times \frac{9}{14} = \square$$

$$\frac{44}{77} \div \frac{18}{28} = \square$$

$$3\frac{9}{10} + \frac{4}{5} = \square$$

$$\frac{23}{12} - \frac{2}{9} = \square$$

$$\frac{40}{8} \times \frac{12}{15} = \square$$

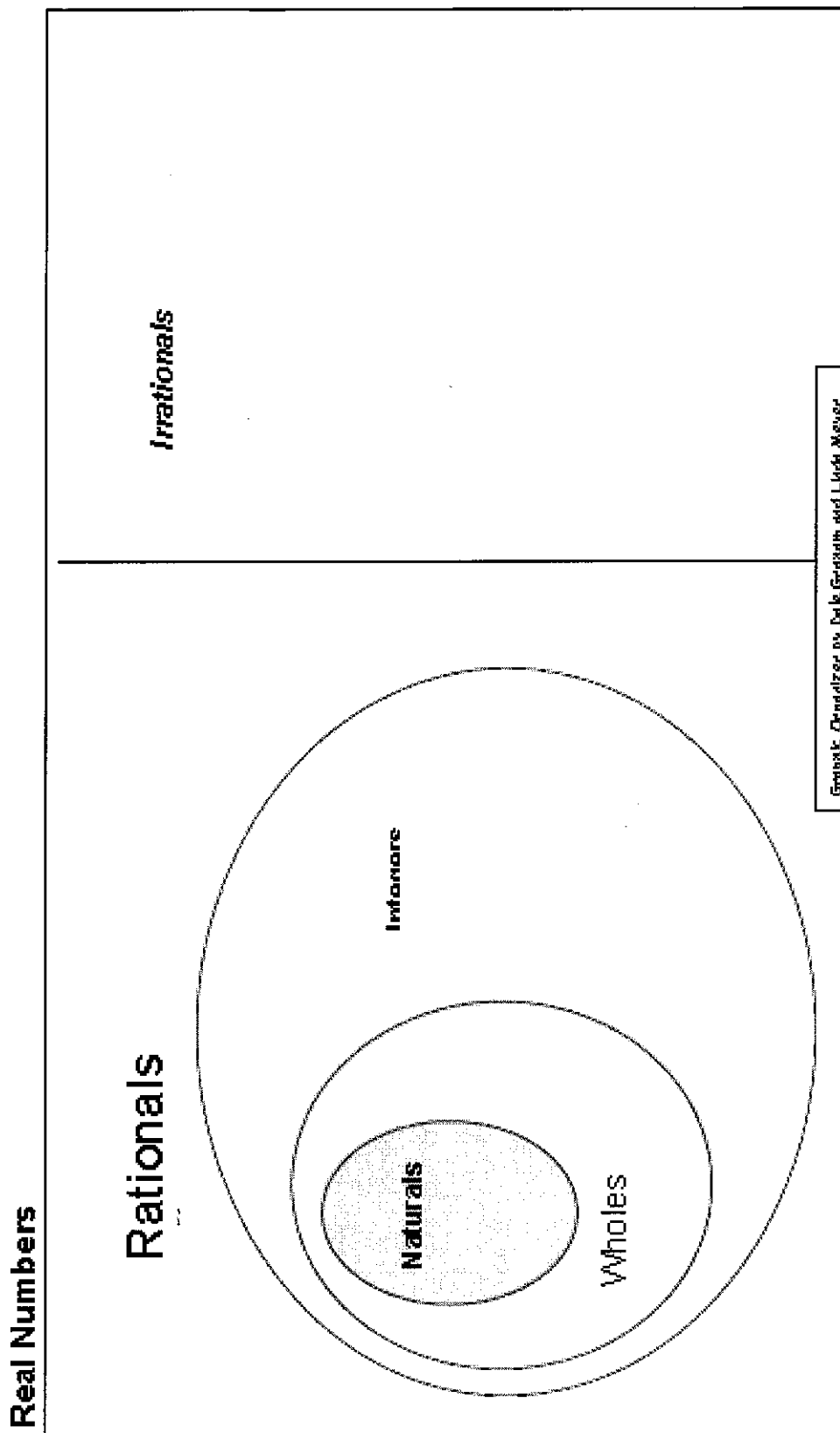
$$\frac{24}{25} \div 72 = \square$$

$$\frac{19}{8} + 2\frac{5}{8} = \square$$

$$\frac{13}{9} - \frac{5}{18} = \square$$

$$\frac{4}{17} \times \frac{68}{5} = \square$$

What are the different types of numbers?



Graphic Organizer by Dale Gratham and Linda Meyer  
Thomas County Central High School, Thomasville, GA

# Worksheet Level 2:

**Goals:**

Identify Rational & Irrational #s

Concept # \_\_\_\_\_

**Practice #1**

Classify each number as RATIONAL (Q) or IRRATIONAL (I)

1)  $\sqrt{47}$

2)  $\frac{11}{9}$

3)  $\frac{19}{4}$

4)  $\sqrt{96}$

5)  $\frac{19}{14}$

6)  $\frac{15}{4}$

7)  $\sqrt{84}$

8)  $-9$

9)  $\sqrt{72}$

10)  $0$

11)  $\frac{8}{9}$

12)  $3$

13)  $7$

14)  $-7$

15)  $-4$

16)  $5$

17)  $-11$

18)  $-14$

19)  $\sqrt{59}$

20)  $9$

**Practice #2**

Tell whether each expression is *rational* or *irrational*.

1.  $-\sqrt{64}$

2.  $\sqrt{1600}$

3.  $\pm\sqrt{160}$

4.  $\sqrt{144}$

5.  $\sqrt{125}$

6.  $-\sqrt{340}$

7.  $\sqrt{1.96}$

8.  $-\sqrt{0.09}$

Practice #3

1. Which set below includes only irrational numbers?

- A.  $\{-\sqrt{12}, -3.7\bar{6}, \sqrt{36}, 4.3858\dots\}$
- B.  $\{-7.2322\dots, \sqrt{5}, \sqrt{15}, 8.27451\dots\}$
- C.  $\{-5.6, \sqrt{14}, 6.\overline{3245}, \sqrt{81}\}$
- D.  $\{-\sqrt{8}, .3\bar{7}, 3.265165065\dots, \sqrt{90}\}$

2. Which set contains only irrational numbers

- A.  $\{-8, -\sqrt{4}, \sqrt{3}, \sqrt{16}\}$
- B.  $\{-\sqrt{64}, \sqrt{0}, \sqrt{19}, \sqrt{13}\}$
- C.  $\{-\sqrt{26}, -\sqrt{16}, \sqrt{2}, \sqrt{8}\}$
- D.  $\{-\sqrt{50}, -\sqrt{13}, \sqrt{10}, \sqrt{54}\}$

3. Which set contains an irrational number?

- A.  $\{2300, 0.48, \frac{11}{7}\}$
- B.  $\{18, 0.1, \frac{12}{5}\}$
- C.  $\{\frac{3}{8}, 4, \sqrt{52}\}$
- D.  $\{0.333\dots, \sqrt{4}, 10\}$

4. Which of the following is an irrational number?

- A.  $\sqrt{16}$  B.  $\sqrt{144}$  C.  $\sqrt{4}$  D.  $\sqrt{3}$

5. Which of the following is an irrational number?

- A.  $\frac{4}{3}$  B.  $\sqrt{24}$  C.  $\sqrt{81}$  D.  $-4.07$

6. Which list contains only rational numbers?

- A.  $-4, 0, \frac{1}{4}, \sqrt{\frac{2}{3}}$  B.  $0, \frac{1}{2}, 1.5, \sqrt{8}$
- C.  $-2, 1, 2.\bar{6}, \sqrt{\frac{3}{2}}$  D.  $0, 0.\overline{36}, 4, \sqrt{24}$

7. What type of number is  $\sqrt{26}$ ?

- A. Whole number B. Integer
- C. Rational number D. Irrational number

8. Which number below is an element in the set of irrational numbers?

$$\sqrt{4}, 3.45, -8.7, \sqrt{2}$$

- A.  $\sqrt{4}$  B. 3.45 C. -8.7 D.  $\sqrt{2}$

9. Which set of real numbers contains only rational numbers?

- A.  $\{\sqrt{121}, \sqrt{196}, \sqrt{24}, 12\}$
- B.  $\{\sqrt{144}, \frac{12}{5}, \frac{1}{3}, \sqrt{3}\}$
- C.  $\{\sqrt{169}, \frac{2}{3}, \sqrt{121}, \frac{14}{4}\}$
- D.  $\{\sqrt{169}, \frac{28}{3}, \frac{13}{2}, \sqrt{31}\}$

# Worksheet Level 3:

## Goals:

Classify Rational numbers as natural, whole, integers or just rational.

Classify Real numbers as rational or irrational.

Concept # \_\_\_\_\_

## Practice #1

Answer each multiple choice question and explain your answer.

Which number represents a rational number?

a.  $\sqrt{2}$

b.  $\sqrt{5}$

c.  $\sqrt{10}$

d.  $\sqrt{25}$

e.  $\sqrt{50}$

Which number represents an integer?

a.  $\sqrt{2}$

b.  $\frac{10}{21}$

c.  $\sqrt{21}$

d. 10

e.  $\sqrt{10}$

Which number represents an irrational number?

a. 40

b.  $\sqrt{40}$

c. 0

d.  $\sqrt{9}$

e. 9

Which number represents a rational number?

a.  $\sqrt{2}$

b.  $\frac{2}{3}$

c.  $\sqrt{3}$

d.  $\sqrt{\frac{2}{3}}$

e.  $\sqrt{15}$

## Practice #2

Use the following list of numbers to answer each question below.

$\sqrt{30}$ ,  $\frac{7}{8}$ ,  $\sqrt{16}$ ,  $\sqrt{\frac{1}{4}}$ ,  $8i$ ,  $-\sqrt{42}$ ,  $3.\overline{692692}$ ,  $4\pi$ ,  $\sqrt{-20}$

1. Identify an integer from the list of numbers.
2. Identify two rational numbers from the list of numbers.
3. Identify three irrational numbers from the list of numbers.

1. Cross out the one number which does not belong in the set.

Whole Numbers { 0, 1, 3, 7, 8.5, 9, 14, ...}

Integers: { -8, 0, 5,  $\frac{3}{4}$ , 24, -9, -57, ...}

Rational numbers { 14,  $\frac{3}{5}$ , -2.4,  $\sqrt{81}$ ,  $0.\overline{333}$ ,  $\sqrt{40}$ , 100, ..}

Irrational numbers {  $\sqrt{3}$ ,  $\pi$ ,  $\sqrt{49}$ ,  $\sqrt{8}$ ,  $5\pi$ ,  $\sqrt{91}$ ,  $5\sqrt{33}$ , ...}

2. List all 9 integers between -3.5 and 5.5.

\_\_\_\_\_

3. List all 6 whole numbers between -3.5 and 5.5.

\_\_\_\_\_

4. List 3 rational numbers between 3 and 3.9.

\_\_\_\_\_

5. Use a calculator to write the decimal expansion. If the number is irrational, then estimate to the thousandths place.

a.  $\frac{5}{12}$

d.  $\frac{7}{11}$

g.  $\frac{3}{8}$

b.  $\sqrt{12}$

e.  $\sqrt{\frac{4}{9}}$

h.  $\frac{11}{20}$

c.  $\frac{1}{3}$

f.  $\sqrt{78}$

i.  $\frac{11}{18}$

True or False:

6.  $\sqrt{40}$  has an infinite non-repeating decimal expansion.

7. The number  $0.\overline{56}$  is a rational number

8. -200 and 500 are integers.

9. All numbers with infinite decimal expansions are irrational.

10. the numbers -8, -3, 5, 17 are all whole numbers.

Name: \_\_\_\_\_ Date: \_\_\_\_\_

**Defining Appropriate Units Practice**

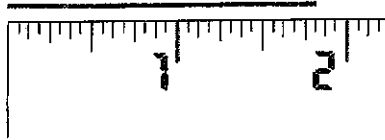
---

1. If you were to measure the volume of an ice cube in your freezer, what would be a reasonable unit to use?
  - a) Cubic feet
  - b) Cubic miles
  - c) Square feet
  - d) Cubic inches
  
2. The length of the side of a particular square may be expressed as 1200 centimeters, 13.9 yards, 12,000 millimeters or 0.091 miles. Which unit is the BEST of these to express the square's perimeter in?
  - a) Miles
  - b) Yards
  - c) Centimeters
  - d) Millimeters
  
3. What is a good unit to measure the area of a room in a house?
  - a) Square feet
  - b) Square miles
  - c) Square inches
  - d) Square millimeters
  
4. Sandra collected data about the amount of rainfall a city received each week. Which value is MOST LIKELY part of Sandra's data?
  - a) 3.5 feet
  - b) 3.5 yards
  - c) 3.5 inches
  - d) 3.5 meters
  
5. Which unit is the most appropriate for measuring the amount of water you drink in a day?
  - a) Kiloliters
  - b) Liters
  - c) Megaliters
  - d) Milliliters

Levels of Accuracy

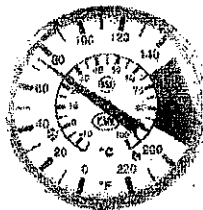
6. What is the most precise measurement this ruler can give for the line segment?

- a)  $1 \frac{13}{16}$  inches
- b)  $1 \frac{7}{8}$  inches
- c)  $1 \frac{3}{4}$  inches
- d) 2 inches



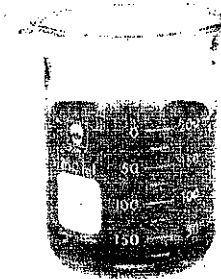
7. The most accurate reading this thermometer can give (in °F) is to the nearest

- a) 1 degree
- b) 5 degrees
- c) 10 degrees
- d) 20 degrees



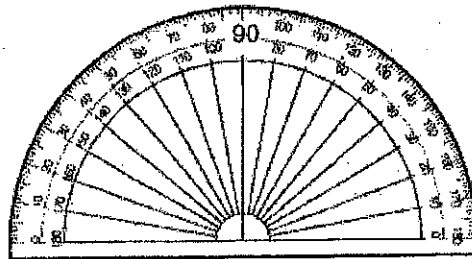
8. What is the most precise measure this beaker can give?

- a) To the nearest 1 mL
- b) To the nearest 25 mL
- c) To the nearest 50 mL
- d) To the nearest 100 mL



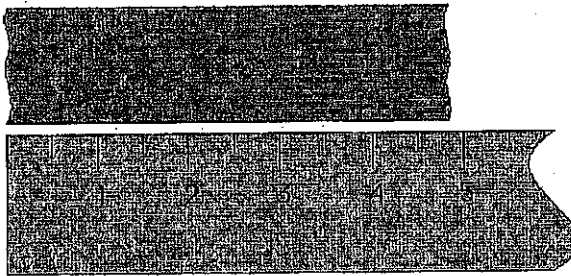
9. How precise can this protractor be?

- a) To the nearest degree
- b) To the nearest ten degrees
- c) To the nearest tenth degree
- d) To the nearest hundredth degree



10. The most precise measure this ruler can give is to the nearest \_\_\_\_\_.

- a) Inch
- b) Half inch
- c) Eighth inch
- d) Quarter inch





## Unit Conversions Practice

- There are 5280 feet in one mile
- There are 0.034 ounces in one milliliter
- There are 0.454 kg in one pound
- There are 1.6 kilometers in one mile
- There are 73 gallons in 2 barrels
- There are 1.05 quarts in one liter
- There are 4 quarts in one gallon

*Do the following one-step unit conversions:*

- 1) Convert 23 miles to feet.
  
  
  
  
  
  
  
  
  
  
- 2) Convert 120 lbs to kilograms.
  
  
  
  
  
  
  
  
  
  
- 3) Convert 451 mL to ounces.
  
  
  
  
  
  
  
  
  
  
- 4) Convert 6 feet to miles.
  
  
  
  
  
  
  
  
  
  
- 5) Convert 4 quarts to liters.
  
  
  
  
  
  
  
  
  
  
- 6) Convert 0.045 barrels to gallons.



Unit Conversion Practice

Solve the unit conversion problem by cross canceling units.

Hint: Same units should be diagonal from each other

Problem	Conversion work and answer (circle your answer, use units)
1 yard to centimeters	
10 feet to meters and centimeters	
9 yards to meters and centimeters	
50 feet to meters	
24 ft/sec to miles/minute	
34 miles to inches	
27 yards/minute to feet/sec	
How many hours are in a day?	
How many minutes are in a day?	
How many seconds are in a day?	
How many hours are in a year?	

6. Convert 7920 yards to miles.

Miles are bigger than yards; there are 1760 yards in every mile. Since I'm converting from a smaller unit (yards) to a bigger unit (miles), my answer needs to be a smaller number. So I divide:

In groups of THREE, figure out a way to solve questions 7 and 8. Be ready to present to the class!

7. Which is faster, going 80 miles an hour or going 40 meters per second?

60 seconds : 1 minute

60 minutes : 1 hour

1 mile : 5280 feet

1 foot : 12 inches

2.54 centimeters : 1 inch

100 centimeters : 1 meter

8. Suppose an object is moving at 66 ft/sec. How fast would you have to drive a car to keep pace with this object?

**Literal Equations & Unit Cancellation (Dimensional Analysis)****Unit conversions**

1 hr = 60 min	1 min = 60 sec	1 ton = 2000 lbs	7 days = 1 week
24 hrs = 1 day	1 kg = 2.2 lbs	1 gal = 3.79 L	264.2 gal = 1 cubic meter
1 mi = 5,280 ft	1 kg = 1000 g	1 lb = 16 oz	20 drops = 1 mL
365 days = 1 yr	52 weeks = 1 yr	2.54 cm = 1 in	1 L = 1000 mL
0.621 mi = 1.00 km	1 yd = 36 inches	1 cc is 1 cm <sup>3</sup>	1 mL = 1 cm <sup>3</sup>

**Solve each problem using dimensional analysis. Every number must have a unit. Work must be shown. Conversion factors are given above.**

- How many miles will a person run during a 10 kilometer race?
- The moon is 250,000 miles away. How many feet is it from earth?
- A family pool holds 10,000 gallons of water. How many cubic meters is this?
- Sixty miles per hour is how many feet per second?
- A small herd of cattle consumes fourteen bales of hay in two weeks. How many bales will this herd consume in a year?
- Saffron costs \$368.00 per ounce. Determine how many grams you can purchase for \$15.00.
- Trent purchases 44 euros worth of souvenirs while on vacation in France. If \$1 U.S. = 0.678 euros, find the cost of the souvenirs in U.S. dollars. Round to the nearest cent.

**Solve each equation or formula for the variable indicated.**

8.  $A = \frac{h(a+b)}{2}$ , solve for h

9.  $xy + w = 9$ , solve for y

Skip

## Equation Vocabulary Flashcards

Cut out on the dotted line and fold on the solid line to create cards.

A number that is multiplied by a variable	<b>coefficient</b>
A term or a combination of terms and operators	<b>expression</b>
Either a single number, a variable, or numbers and/or variables multiplied together	<b>term</b>
A mathematical sentence stating that two expressions are equal	<b>equation</b>
A symbol for an unknown value	<b>variable</b>
A number on its own	<b>constant</b>
A symbol (+, ×, −, or ÷) representing a mathematical operation	<b>operator</b>

# Equation Vocabulary

Name \_\_\_\_\_ Date \_\_\_\_\_

<p>In <math>3x + 7 = 32</math>, 7 is a/an _____.</p>	<p>In <math>3x + 7 = 32</math>, 3 is a/an _____.</p>
<p>In <math>3x + 7 = 32</math>, <math>x</math> is a/an _____.</p>	<p>In <math>3x + 7 = 32</math>, 32 is a/an _____.</p>
<p>In <math>3x + 7 = 32</math>, <math>3x</math> is a/an _____.</p>	<p>In <math>3x + 7 = 32</math>, <math>3x + 7</math> is a/an _____.</p>
<p>In <math>12ab - 6z = 99a + 4</math>, list all of the coefficients.</p>	<p>In <math>12ab - 6z = 99a + 4</math>, list all of the terms.</p>
<p>In <math>12ab - 6z = 99a + 4</math>, list all of the expressions.</p>	<p>In <math>12ab - 6z = 99a + 4</math>, list all of the variables.</p>

<p>How many terms are in each of the following algebraic expressions?</p> <p>a) <math>6x^3 + 8x^2 - 4x</math>                      b) <math>15xy^3 + 21x^2 - 16</math>                      c) <math>19x^4 + 8x^2 + 4xy - 2</math>                      d) <math>8x^3 + 14x^5 - 20x^2 + 9x - 25</math>                      e) <math>9x^3y + 5x^4 - 24x^2 + 7x - 6x^6</math>                      f) <math>2ab + 7</math>                      g) <math>15xy + 7x + 2y + 9</math></p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;"> <p><b>**Highlight each individual term.</b></p> </div>	<p style="text-align: center;"><b><u>ANSWERS</u></b></p> <p>A</p> <p>B</p> <p>C</p> <p>D</p> <p>E</p> <p>F</p> <p>G</p>
<p>Identify the coefficients in each expression.</p> <p>a) <math>81x^3 + 7xy^2 - 14x</math>                      b) <math>4x^3 + 8x^2 - 24</math>                      c) <math>61x^2 + 6x^2 + 2x - 7</math>                      d) <math>4xyz^3 + 8x^2 - 2xy^2 + 29x - 46</math>                      e) <math>22a^3 + 38a^2 - 12b</math>                      f) <math>28a^2 - 17ab</math>                      g) <math>7x + 2xy</math></p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin-left: auto; margin-right: auto;"> <p><b>**Highlight each coefficient.</b></p> </div>	<p style="text-align: center;"><b><u>ANSWERS</u></b></p> <p>A</p> <p>B</p> <p>C</p> <p>D</p> <p>E</p> <p>F</p> <p>G</p>
<p>Identify the factors of each expression. Separate factors with comas in the answers column.</p> <p>a) <math>12x^3y^2</math>                      b) <math>62x^4</math>                      c) <math>2x^2y</math>                      d) <math>125x^5</math>                      e) <math>9a^7</math>                      f) <math>-12</math>                      g) <math>-12ab^2c</math></p>	<p style="text-align: center;"><b><u>ANSWERS</u></b></p> <p>A</p> <p>B</p> <p>C</p> <p>D</p> <p>E</p> <p>F</p> <p>G</p>



Identify the Exponents in each expression. a) $12x^3y^2$ b) $62x^4$ c) $2x^2y$ d) $125x^5$ e) $9a^7$ f) $-12$ g) $-12ab^2c$	<b>**Highlight each exponent.</b>	<b><u>ANSWERS</u></b>
		A
		B
		C
		D
		E
		F
		G

List the like terms in each of the following algebraic expressions. a) $14xy^2 + 25x - 6x + 2$ b) $8x^2 + 12x^2 - 9xy + 3x$ c) $86x^3 + 42x - 36x^3 + 21y$ d) $4x^2 + 6y - 6x + 7y$ e) $36m^3 + 22m^2n^2 - 2m^2n^2 + 7m - 50$	<b>**Highlight like terms with the same color highlighter.</b>	<b><u>ANSWERS</u></b>
		A
		B
		C
		D
		E

Identify the constant and variables in each algebraic expression. a) $81x^3 + 7xy^2 - 14x$ b) $4x^3 + 8x^2 - 24$ c) $61x^2 + 6x^2 + 2x - 7$ d) $4xyz^3 + 8x^2 - 2xy^2 + 29x - 46$ e) $22a^3 + 38a^2 - 12b$ f) $28a^2 - 17ab$ g) $7x + 2xy$	<b><u>Constant</u></b>	<b><u>Variables</u></b>
	A	
	B	
	C	
	D	
	E	
	F	
	G	

Write an expression with 5 terms, containing the coefficients 7, 21, 14, and 8.

---

Name \_\_\_\_\_

Date \_\_\_\_\_

Topic : Word Problems with Consecutive Integers - Worksheet 1

Solve the following:

- 1 Two consecutive integers have a sum of 77. What are the two integers?
- 2 The sum of two consecutive integers is 41. What are the two integers?
- 3 What four consecutive integers have a sum of 86. Name them.
- 4 Two consecutive even integers have a sum of 38. What are the two integers?
- 5 Two consecutive odd integers have a sum of 92. What are the two odd integers?
- 6 What two consecutive integers have a sum of 47?
- 7 What two consecutive odd integers have a sum of 48?
- 8 Two negative consecutive integers have a sum of -45. What are the integers?
- 9 The sum of two consecutive integers is 75. What are the two integers?
- 10 What three consecutive odd integers have a sum of 81?



## Practice - Word Problems

Add these  
in 2020

Solve.

1. When five is added to three more than a certain number, the result is 19.  
What is the number?
2. If five is subtracted from three times a certain number, the result is 10. What is the number?
3. When 18 is subtracted from six times a certain number, the result is  $-42$ .  
What is the number?
4. A certain number added twice to itself equals 96. What is the number?
5. A number plus itself, plus twice itself, plus 4 times itself, is equal to  $-104$ .  
What is the number?
6. Sixty more than nine times a number is the same as two less than ten times the number. What is the number?
7. Eleven less than seven times a number is five more than six times the number.  
Find the number.
8. Fourteen less than eight times a number is three more than four times the number. What is the number?
9. The sum of three consecutive integers is 108. What are the integers?
10. The sum of three consecutive integers is  $-126$ . What are the integers?
11. Find three consecutive integers such that the sum of the first, twice the second, and three times the third is  $-76$ .
12. The sum of two consecutive even integers is 106. What are the integers?
13. The sum of three consecutive odd integers is 189. What are the integers?

14. The sum of three consecutive odd integers is 255. What are the integers?
15. Find three consecutive odd integers such that the sum of the first, two times the second, and three times the third is 70.
16. The second angle of a triangle is the same size as the first angle. The third angle is 12 degrees larger than the first angle. How large are the angles?
17. Two angles of a triangle are the same size. The third angle is 12 degrees smaller than the first angle. Find the measure the angles.
18. Two angles of a triangle are the same size. The third angle is 3 times as large as the first. How large are the angles?
19. The third angle of a triangle is the same size as the first. The second angle is 4 times the third. Find the measure of the angles.
20. The second angle of a triangle is 3 times as large as the first angle. The third angle is 30 degrees more than the first angle. Find the measure fo the angles.
21. The second angle of a triangle is twice as large as the first. The measure of the third angle is 20 degrees greater than the first. How large are the angles?
22. The second angle of a triangle is three times as large as the first. The measure of the third angle is 40 degrees greater than that of the first angle. How large are the three angles?
23. The second angle of a triangle is five times as large as the first. The measure of the third angle is 12 degrees greater than that of the first angle. How large are the angles?
24. The second angle of a triangle is three times the first, and the third is 12 degrees less than twice the first. Find the measures of the angles.
25. The second angle of a triangle is four times the first and the third is 5 degrees more than twice the first. Find the measures of the angles.
26. The perimeter of a rectangle is 150 cm. The length is 15 cm greater than the width. Find the dimensions.
27. The perimeter of a rectangle is 304 cm. The length is 40 cm longer than the width. Find the length and width.
28. The perimeter of a rectangle is 152 meters. The width is 22 meters less than the length. Find the length and width.
29. The perimeter of a rectangle is 280 meters. The width is 26 meters less than the length. Find the length and width.

# Why is our Idea Like the Pacific?

For each exercise below, add the polynomials. Find your answer at the bottom of the page and write the letter of that exercise above it.

- T  $6x + 9$                        I  $3x - 4$                        O  $8x^2 + 2x + 1$                        S  $-5x^2 - 5x + 3$   
 $\underline{x - 1}$                                        $\underline{5x - 7}$                                        $\underline{x^2 - 4x + 7}$                                        $\underline{6x^2 - x}$

- N  $(7x^2 + 3x + 9) + (2x^2 + 5x - 2)$                        S  $(2x^4 + 5x^2 - 11) + (-6x^4 - 7x^2 + 1)$   
 U  $(-3x^2 + x - 7) + (8x^2 - 4x - 4)$                        N  $(-4x^4 + 3x^3 - 7x^2 - x) + (-9x^3 + 7x^2 - 5x - 1)$   
 I  $(6x^3 + 2x^2 - 3x) + (3x^3 - 10x^2 - x)$                        J  $(4x^2 + 3xy - y^2) + (x^2 - 8xy - 2y^2)$   
 T  $(-4x^3 + 6x + 1) + (5x^2 - x - 12)$                        A  $(2x^2y - xy^2) + (6x^2y + 7xy^2)$   
 O  $(9x^3 - x^2 + 8) + (-9x^3 + 2x^2 + 3x)$                        T  $(x^3y + 3x^2y^2 + 2xy^3) + (2x^3y - 9x^2y^2 - xy^3)$

$8x - 11$																				
$-4x^3 + 5x^2 + 5x - 11$																				
$x^2 - 6x + 3$																				
$8x^2y - 3xy^2$																				
$5x^2 - 5xy - 3y^2$																				
$5x^2 - 3x - 11$																				
$-4x^4 - 2x^2 - 10$																				
$7x + 8$																				
$-4x^3 + 5x^2 - 3x - 1$																				
$8x^2y + 6xy^2$																				
$5x^2 - 5xy - 11$																				
$9x^2 + 8x + 7$																				
$x^2 + 3x + 8$																				
$3x^3y - 6x^2y^2 + xy^3$																				
$9x^3 - 8x^2 - 4x$																				
$9x^2 - 2x + 8$																				
$-4x^4 - 6x^3 - 6x - 1$																				

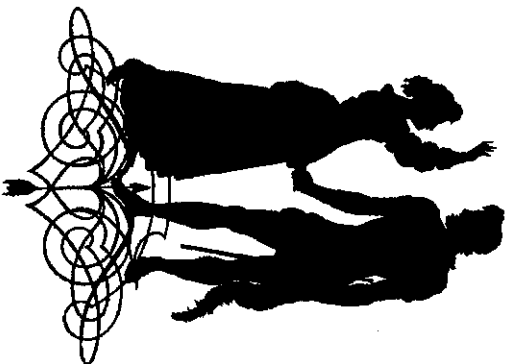
# Daffynition Decoder

1. Romantic: 11 13 8 12 11 1 8 11 13 8 13 10 3 5 12

2. American: 11 2 11 9 9 6 5 7 13 12 11 8 13 3 4

For each exercise below, subtract the second polynomial from the first. Find your answer in the answer column and notice the letter next to it. Each time the exercise number appears in the code, write this letter above it. Keep working and you will decode the "de-fun-tions."

- ①  $(7x + 4) - (2x + 9)$
- ②  $(3x + 12) - (5x - 6)$
- ③  $(-4x^2 + 10) - (6x^2 - 9)$
- ④  $(2x^2 + 3x + 8) - (x^2 + 5x - 1)$
- ⑤  $(-x^2 + 9x - 2) - (9x^2 - 4x + 4)$
- ⑥  $(3x^2 + 7x + 1) - (8 + 5x + x^2)$
- ⑦  $(4x^3 + 6x^2 - 8x) - (x^3 - 2x^2 + 12x)$
- ⑧  $(x^3 + 2x^2 + 5x) - (3x^2 - x - 7)$
- ⑨  $(x^4 + 8x^2 - 1) - (x^2 - 3x^3 + x^4)$
- ⑩  $(5x^4 - 2x^2) - (3x - 2x^2 - 4x^3 + 6x^4)$
- ⑪  $(3x^2 + 7xy - 2y^2) - (x^2 - 6xy + 2y^2)$
- ⑫  $(-x^2 - 9xy + 5y^2) - (4x^2 - 2xy - y^2)$
- ⑬  $(4x^2y - 3xy^2) - (3x^2y - 8xy^2)$



Answers:

- ① M  $-x^4 + 4x^3 - 7x^2$
- ② S  $-x^4 + 4x^3 - 3x$
- ③ U  $3x^3 + 5x^2 + 7$
- ④ L  $5x - 5$
- ⑤ E  $-10x^2 + 19$
- ⑥ F  $2x^2 + 2x - 19$
- ⑦ C  $-10x^2 + 13x - 6$
- ⑧ H  $-2x + 18$
- ⑨ T  $-5x^2 - 7xy + 6y^2$
- ⑩ O  $3x^3 + 8x^2 - 20x$
- ⑪ P  $3x^3 + 7x^2 - 1$
- ⑫ R  $x^2 - 2x + 9$
- ⑬ A  $2x^2 + 13xy - 4y^2$
- ⑭ N  $x^2y + 5xy^2$
- ⑮ Y  $2x^2 + 2x - 7$
- ⑯ B  $-5x^2 - 6xy + 7y^2$
- ⑰ I  $x^3 - x^2 + 6x + 7$

## Multiplying Polynomials

**Find each product.**

1)  $6v(2v + 3)$

2)  $7(-5v - 8)$

3)  $2x(-2x - 3)$

4)  $-4(v + 1)$

5)  $(2n + 2)(6n + 1)$

6)  $(4n + 1)(2n + 6)$

7)  $(x - 3)(6x - 2)$

8)  $(8p - 2)(6p + 2)$

9)  $(6p + 8)(5p - 8)$

10)  $(3m - 1)(8m + 7)$

11)  $(2a - 1)(8a - 5)$

12)  $(5n + 6)(5n - 5)$

$$13) (4p - 1)^2$$

$$14) (7x - 6)(5x + 6)$$

$$15) (6n + 3)(6n - 4)$$

$$16) (8n + 1)(6n - 3)$$

$$17) (6k + 5)(5k + 5)$$

$$18) (3x - 4)(4x + 3)$$

$$19) (4a + 2)(6a^2 - a + 2)$$

$$20) (7k - 3)(k^2 - 2k + 7)$$

$$21) (7r^2 - 6r - 6)(2r - 4)$$

$$22) (n^2 + 6n - 4)(2n - 4)$$

$$23) (6n^2 - 6n - 5)(7n^2 + 6n - 5)$$



13)  $(3 + 7v^2)(3 - 7v^2)$

14)  $(7v^2 - 6)(7v^2 + 6)$

15)  $(2 + v)^2$

16)  $(6v + 3)(6v - 3)$

17)  $(8a^2 - 2)(8a^2 + 2)$

18)  $(4a + 7)^2$

19)  $(2n - 7)^2$

20)  $(-m + 5n)(-m - 5n)$

21)  $(7u + 4v)(7u - 4v)$

22)  $(-y - 3x)(-y + 3x)$

23)  $(-9x^2 - 10y)^2$

24)  $(4u + 9v)^2$

25)  $(7u + 6v)(7u - 6v)$

26)  $(-6x - 7y^2)^2$

## Operations with Radicals

Date \_\_\_\_\_ Period \_\_\_\_\_

**Notes:****Simplify.**

1)  $5\sqrt{128n^5}$

2)  $-3\sqrt{210x}$

**Now you try:****Simplify.**

3)  $8\sqrt{72m^2n^5p^2}$

4)  $4\sqrt{40x^4y^4z^3}$

5)  $-2\sqrt{12p^5q^5r}$

6)  $4\sqrt{72m^4p^4q^5}$

7)  $7\sqrt{175x^5y^5z}$

8)  $-9\sqrt{36x^4y^5z^4}$

9)  $8\sqrt{147x^4y^2z^4}$

10)  $-4\sqrt{112x^3y^4z^3}$

11)  $7\sqrt{36h^5j^5k^4}$

12)  $-2\sqrt{8hjk^5}$

**Notes:****Simplify.**

13)  $3\sqrt{12} + 2\sqrt{3} - \sqrt{6}$

14)  $-\sqrt{12} - 2\sqrt{27} + 2\sqrt{18}$

**Now you try:****Simplify.**

15)  $2\sqrt{45} - \sqrt{20} + 4\sqrt{8} - \sqrt{8}$

16)  $-4\sqrt{5} - 4\sqrt{6} - 2\sqrt{45} - \sqrt{45}$

17)  $-3\sqrt{63} - \sqrt{72} - 4\sqrt{7} - 2\sqrt{48}$

18)  $2\sqrt{72} - \sqrt{8} + 4\sqrt{80} - 2\sqrt{8}$

19)  $4\sqrt{6} - 4\sqrt{8} - \sqrt{96} + 3\sqrt{18}$

20)  $3\sqrt{28} + 3\sqrt{112} - 4\sqrt{6} - 3\sqrt{20}$

21)  $3\sqrt{72} - 2\sqrt{5} + 4\sqrt{32} - 2\sqrt{96}$

22)  $-2\sqrt{18} + 4\sqrt{20} - 2\sqrt{2} + 2\sqrt{48}$

23)  $-4\sqrt{18} + 2\sqrt{8} - 3\sqrt{24} + 2\sqrt{8}$

24)  $-4\sqrt{80} - 2\sqrt{112} - \sqrt{112} - 3\sqrt{7}$

**Notes:**  
**Simplify.**

25)  $-4\sqrt{6}(\sqrt{5} + 3\sqrt{3})$

26)  $\sqrt{15}(3 + \sqrt{5})$

**Now you try:**  
**Simplify.**

27)  $\sqrt{2}(3\sqrt{2} + \sqrt{6})$

28)  $\sqrt{5}(\sqrt{5} + 2)$

29)  $\sqrt{15}(2\sqrt{5} + 3)$

30)  $\sqrt{3}(3 - \sqrt{2})$

31)  $-4\sqrt{5}(\sqrt{5} + \sqrt{2})$

32)  $(6\sqrt{5} - 2\sqrt{7b})(2\sqrt{5} + 7\sqrt{6})$

33)  $(7\sqrt{7} - 2\sqrt{5n})(5\sqrt{6} + 3\sqrt{5n})$

34)  $(5\sqrt{6} - 4\sqrt{2})(-\sqrt{3} + 5\sqrt{2})$

35)  $(-4\sqrt{2} - 2\sqrt{3x})(-\sqrt{2x} - 3\sqrt{3})$

36)  $(-3\sqrt{2m} - 7)(4\sqrt{2m} + 5)$

**Notes:**  
**Simplify.**

37)  $\frac{4\sqrt{15}}{\sqrt{125}}$

38)  $\frac{2\sqrt{12}}{\sqrt{64}}$

39)  $\frac{3}{2+3\sqrt{3}}$

40)  $\frac{2\sqrt{5}}{3-3\sqrt{2}}$

41)  $\frac{2+4\sqrt{3}}{-5-3\sqrt{3}}$

42)  $\frac{-3-\sqrt{5}}{\sqrt{2}+\sqrt{5}}$

Now you try:  
Simplify.

43)  $\frac{3}{2\sqrt{2}}$

44)  $\frac{5\sqrt{3}}{5\sqrt{6}}$

45)  $\frac{2\sqrt{3}-2\sqrt{2}}{5\sqrt{6}}$

46)  $\frac{2\sqrt{5}-2\sqrt{2}}{\sqrt{11}}$

47)  $\frac{3}{5\sqrt{2}+3\sqrt{5}}$

48)  $\frac{4}{-2-\sqrt{5}}$

49)  $\frac{4-5\sqrt{2}}{\sqrt{5}+5\sqrt{2}}$

50)  $\frac{\sqrt{3}-2\sqrt{5}}{4\sqrt{5}+4}$

51)  $\frac{-3-\sqrt{5}}{\sqrt{2}-4}$

52)  $\frac{-5-\sqrt{2}}{4-\sqrt{2}}$

## Rational Exponents

Date \_\_\_\_\_ Period \_\_\_\_\_

**Notes:****Write each expression in radical form.**

1)  $7^{\frac{5}{2}}$

2)  $4^{\frac{2}{3}}$

3)  $10^{\frac{1}{6}}$

4)  $5^{\frac{2}{3}}$

5)  $10^{\frac{1}{2}}$

6)  $2^{\frac{3}{2}}$

**Write each expression in exponential form.**

7)  $(\sqrt{5})^5$

8)  $(\sqrt{6})^3$

9)  $(\sqrt[5]{2})^2$

10)  $\sqrt[4]{5}$

11)  $(\sqrt[3]{5})^4$

12)  $(\sqrt[3]{5})^5$

Express using rational exponents.

1.  $\sqrt{14}$

4.  $\sqrt[4]{8x^3y^5}$

2.  $\sqrt[3]{8x^3y^6}$

5.  $\sqrt[3]{16a^5b^7}$

3.  $\sqrt{25a^3b^4}$

6.  $\sqrt[6]{b^3}$

Express in simplest radical form.

7.  $7^{\frac{1}{2}}$

10.  $4^{\frac{1}{3}}x^{\frac{2}{3}}y^{\frac{1}{3}}$

8.  $36^{\frac{1}{4}}$

11.  $x^{\frac{3}{4}}y^{\frac{1}{2}}$

9.  $x^{\frac{3}{2}}y^{\frac{5}{2}}$

12.  $5^{\frac{1}{6}}x^{\frac{1}{2}}y^{\frac{1}{3}}$

Evaluate without using a calculator.

13.  $9^{\frac{3}{2}}$

17.  $16^{\frac{3}{2}}$

14.  $16^{\frac{3}{4}}$

18.  $4^{\frac{3}{2}}$

15.  $9^{\frac{1}{3}} \cdot 9^{\frac{5}{3}}$

19.  $\sqrt[4]{81}$

16.  $343^{\frac{2}{3}}$

20.  $36^{\frac{3}{4}} \div 36^{\frac{1}{4}}$

## Unit 1 TEST REVIEW

Date \_\_\_\_\_ Period \_\_\_\_\_

Draw the Real Number system and provide examples of Rational and Irrational numbers on your diagram.

1)

Using unit conversion, answer the following questions:

2)

a) convert .09 miles  
to cm.

→ 36 in = a yard

→ 1760 yds = a mile

→ 2.54 cm = 1 inch

b) convert 36 miles/hour  
to inches per second.

Classify the parts of an expression:

3)  $-3x + 8y - 2$

What is the coefficient of x?

What is the constant?

4)  $2x - 3y + 7$

What is the coefficient of x?

What is the constant?

Name all the terms of the expression

Simplify each expression.

5)  $(14n^5 - 9n^4 - 8n^3) + (3n^5 + 2n^3 + n)$

6)  $(12x + 7 + 2x^3) + (13x^3 + 11 - 11x)$

7)  $(5x^3y - 7x^4y) + (-6y^4 + x^3y - 2x^4y) - (10y^4 + 8x^3y)$

8)  $(7a^3b^2 + 13ab^2) - (11ab^2 + 3b^2 - 14a^3b^2) + (-6b^4 - 11b^2)$

Find each product.

9)  $(8x^2 + 5)^2$

10)  $(7 + 8r)^2$

11)  $(4r - 4)(4r + 4)$

12)  $(6x^2 + 3)^2$

13)  $(-3m^2 - m + 5)(2m^2 - 6m - 8)$

14)  $(-5k^2 - 8k + 3)(7k^2 + 5k - 6)$

Simplify.

15)  $-2\sqrt{63x^3yz^2}$

16)  $-2\sqrt{100hj^3k^5}$

Simplify.

17)  $2\sqrt{32} + 3\sqrt{48} - \sqrt{2} + 2\sqrt{2}$

18)  $3\sqrt{24} + 3\sqrt{112} - 4\sqrt{63} + 3\sqrt{54}$

19)  $\sqrt{3}(\sqrt{3} + 3)$

20)  $\sqrt{2}(\sqrt{10} - 3\sqrt{2})$

21)  $(5\sqrt{2} - 4\sqrt{7k})(5\sqrt{2k} - \sqrt{7})$

22)  $(-4\sqrt{5r} - 2)(7\sqrt{5} - 4)$

Write each expression in radical form.

23) a)  $3^{4/5}$

b)  $x^{y/3}$

c)  $4x^{y/2}$

d)  $(2x)^{y/6}$

Write each expression using rational exponents.

24) a)  $\sqrt{5}$

b)  $\sqrt{3x^4}$

c)  $2\sqrt[3]{x}$

d)  $\sqrt[3]{5^4}$