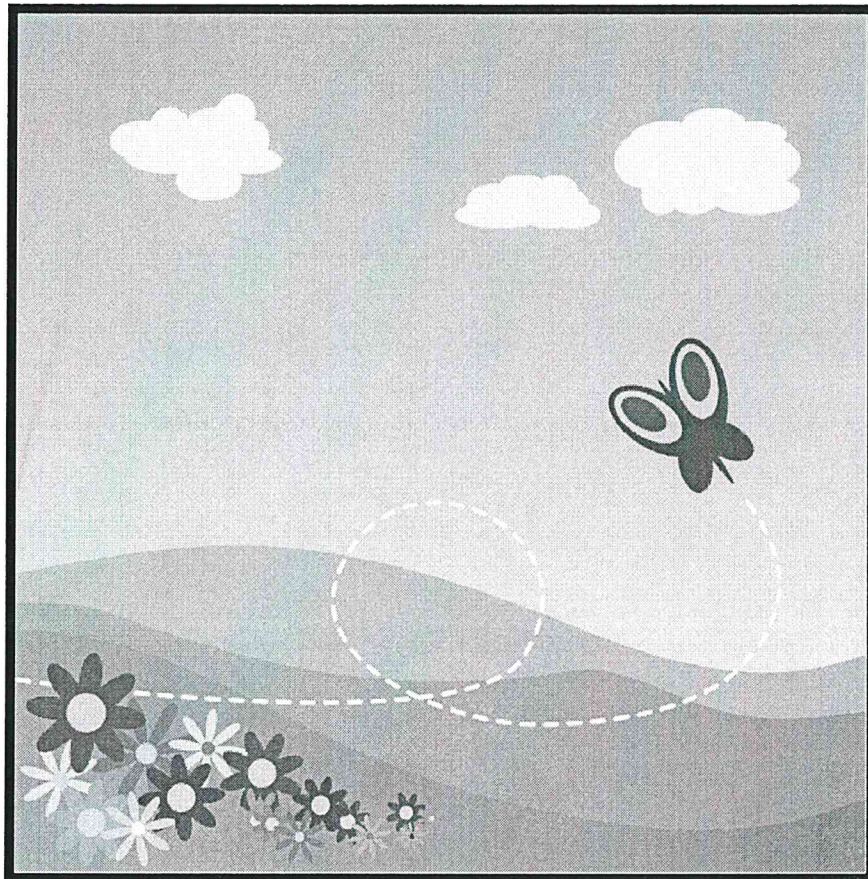


# Students Entering 7th Grade

## Summer 2023 Math Work



Do not write in this packet.

Tear off the last page and use it as your answer sheet.

You are to bring the completed answer sheet to school on the first day.

7th Grade Supply List  
2023-2024

MANY #2 Pencils

2 different colored highlighters

1 pencil sharpener

3 packages of looseleaf paper

1 package of graph paper

2 glue sticks

1 pair of scissors

1 box colored pencils

1 12-inch ruler

7 Marble notebooks (one each for ELA, religion, health, social studies, Spanish, and two for math)

1 small spiral notebook for Science

1 8-pocket folder

1 pocket dictionary and thesaurus

2 boxes tissues

1 roll paper towels

1 container of cleaning wipes

1 1" binder for Spanish

**\*\*Please note that the following items will be available to be purchased at school: 8 pocket vinyl folder.**

## 7th Grade ELA Summer Reading

1. All students must read either *A Wrinkle in Time* by Madeline L'Engle or *The Boy in the Striped Pajamas* by John Boyne. There will be an in class writing assignment / project to complete in September.
2. Choose 1 book from the following list to read. Answer these 10 questions about the book. The answers should be typed 12 sized font double spaced. This is due on the first day of school. Give details in your answer. Be careful of spelling, grammar and punctuation.

### Books

1. *Hatchet* by Gary Paulsen
2. *Pictures of Hollis Woods* by Patrice Reilly Giff
3. *Number the Stars* by Lois Lowry
4. *The Cay* by Theodore Taylor
5. *Crispin: The Cross of Lead* by Avi
6. *Hello Universe* by Erin Entrada Kelly
7. *Brian's Winter* by Gary Paulsen
8. *Out of the Dust* by Karen Hesse

### Summer Reading Questions

1. What did you like best about the book? Explain
2. What did you like least about the book? Explain
3. Who were your favorite characters? Least favorite? Explain

4. What feelings did this book evoke for you? Explain
5. What do you think of the book's cover? How well does it convey what the book is about?  
If the book has been published with different covers, which one did you like best? Why?  
Create a new cover to hand in with this assignment. Be creative.
6. If you got the chance to ask the author of this book one question, what would it be?
7. What do you think of the book's title? How does it relate to the book's contents? What other title might you choose?
8. What do you think the author's purpose was in writing this book? What ideas was he or she trying to get across?
9. If you were making a movie of this book, who would you cast? Why?
10. Share a favorite quote from the book. Why did this quote stand out? Explain



# Math Skills

Students should practice basic math skills every day in order to prepare for seventh grade, Fluency of addition, subtraction, multiplication, and division, helps students to grasp new concepts without getting “hung up” on the math.

Have fun!

Decimal Place Value Chart												
Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	•	tenths	hundredths	thousandths	ten thousandths	hundred thousandths
M	HTh	TTh	Th	H	T	O	•	t	h	th	tth	hth
							•					
							•					

## Invisible Math!

$10 = 10.0$ There is a decimal point at the end of every whole number.	$6 = +6$ There is a positive sign to the left of every number.	$125^0 = 1$ Any nonzero number to the zero power equals one.
$7 = 7^1$ Every whole number has an exponent of one.	$3 = 3/1$ There is a denominator of one for every whole number.	$x = 1x$ There is a coefficient of one to the left of every variable.
Multiplication signs $a \times b$ $a \cdot b$ $ab$ $a(b)$ $a * b$	$2y = 2 \times y$ There is a multiplication sign between every coefficient and variable.	$-x = -1x$ A negative sign to the left of a variable is the same as negative one times the variable.
		Division signs $a \div b$ $a/b$ $b \overline{)a}$



# Positive Rational Numbers

To add or subtract decimals:

Step 1: Line up the decimals.

Step 2: Add trailing zeros in empty spaces if needed.

Step 3: Bring down the decimal.

Step 4: Add or subtract as usual.

$$\begin{array}{r} 34.567 \\ + 65.371 \\ \hline 99.938 \end{array}$$

1.  $5.5 + 0.61$

2.  $2.2 + 9$

3.  $19.9 - 5.32$

4.  $3.49 - 0.83$

5.  $14.55 - 2.18$

To multiply decimals:

Step 1: Line up the NUMBERS.

Step 2: Multiply like whole numbers.

Step 3: Count decimal places in the problem.

Step 4: Put the same number of places behind the decimal in the product.

$$\begin{array}{r} 2.34 \\ \times 1.2 \\ \hline 2.808 \end{array}$$

2 decimal places  
+ 1 decimal place  

---

3 decimal places

6.  $5.4 \times 2.7$

7.  $0.02 \times 0.29$

8.  $1.74 \times 13$

9.  $0.75 \times 2.4$

10.  $604 \times 2.5$

To divide decimals:

11.  $31.773 \div 5.1$

12.  $6.85 \div 5$

13.  $9.24 \div 0.7$

14.  $163.80 \div 3.5$

15.  $7.224 \div 0.08$

divisor 1.4 | 3.64 dividend

1. Make the divisor a whole number by moving the decimal point.

2. Move the decimal point in the dividend the same number of places.

→

2.6 quotient

14 | 36.4 dividend

---

28

---

84

---

84

---

0

3. Divide

4. Line up decimal point in the quotient with decimal point in the dividend.

$$3.64 \div 1.4 = 36.4 \div 14 = 2.6$$

To add or subtract fractions with the same denominators:

$$16. \quad \begin{array}{r} \frac{3}{6} \\ + \frac{2}{6} \\ \hline \end{array}$$

$$\frac{1}{10} + \frac{7}{10} = \frac{8 \div 2}{10 \div 2} = \boxed{\frac{4}{5}}$$

Add the numerators.  
Keep the denominator the same.  
Simplify.

$$\frac{7}{12} - \frac{3}{12} = \frac{4 \div 4}{12 \div 4} = \boxed{\frac{1}{3}}$$

Subtract the numerators.  
Keep the denominator the same.  
Simplify.

$$17. \quad \begin{array}{r} 3\frac{2}{10} \\ + 5\frac{3}{10} \\ \hline \end{array}$$

$$18. \quad \begin{array}{r} \frac{7}{9} \\ - \frac{3}{9} \\ \hline \end{array}$$

To add or subtract fractions with different denominators:

$$19. \quad \frac{1}{5} + \frac{1}{2} + \frac{1}{3} =$$

$$\frac{1}{6} + \frac{2}{9}$$

$$3 \cdot \frac{1}{6} + \frac{2 \cdot 2}{9 \cdot 2}$$

Rewrite with a common denominator.  
Multiples of 6: 6, 12, 18, 24 . . .  
Multiples of 9: 9, 18 . . .

$$20. \quad \frac{3}{4} + \frac{2}{5} + \frac{1}{2} =$$

$$\frac{3}{18} + \frac{4}{18}$$

Add the fractions (add the numerators, the denominator stays the same).

$$\boxed{\frac{7}{18}}$$

How to **multiply** fractions:

Step 1: Multiply the numerators across.

Step 2: Multiply the denominators across.

Step 3: Simplify

$$21. \quad \frac{3}{10} \times \frac{2}{3} =$$

$$22. \quad 1\frac{2}{4} \times 3\frac{5}{6} =$$

How to **divide** fractions:

Step 1: Keep the first fraction.

Step 2: Change the operation sign to multiplication

Step 3: Flip the second fraction. (Use the reciprocal)

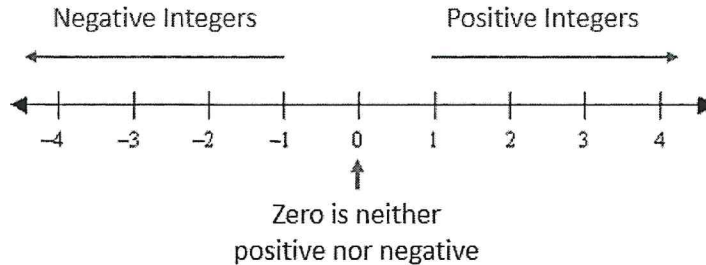
$$23. \quad \frac{3}{4} \div \frac{4}{5} =$$

$$24. \quad 4\frac{1}{10} \div 2\frac{1}{2} =$$

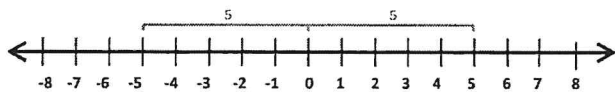


# Integers and Rational Numbers

## Integer Number Line



### Opposite Numbers



Opposite numbers are the same distance from 0.  
The sum of opposites is zero.

Examples:

-5 and 5 are opposite numbers.

The opposite of 0 is 0.

Identify opposites:

25. The opposite value of -19 is

26. The opposite value of 36 is

Compare the integers using  $>$ ,  $<$ , or  $=$ :

27.  $13 \square 9$

28.  $-7 \square 15$

29.  $17 \square -11$

Order the integers from least to greatest:

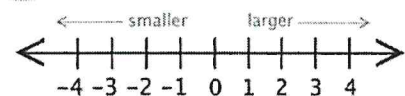
30. 37, -37, 38, -38

31. Four friends went scuba diving today. Ali dove 70 feet into the water. Tim went down 50 feet. Carl dove 65 feet down, and Brenda reached 48 feet below sea level. Write the four friends' names in order from the person whose depth was closest to the surface to the person whose depth was the farthest from the surface.

32. Plot the following integers on a number line. 2, -3, 4, -5, 0

## Compare and Order Integers

**Compare** the signs as well as the size of the numbers.



\* Negative numbers are smaller than positive numbers.  $-2 < 1$

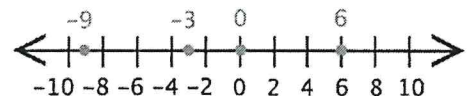
\* When both numbers are negative the larger size has a smaller value.  $-4 < -2$

**Order** numbers according to where they are on the number line.

\* Least to greatest  $\rightarrow$  left to right

\* Greatest to least  $\rightarrow$  right to left

Example: Order the set  $\{-9, 0, 6, -3\}$   
from least to greatest



The order from left to right is -9, -3, 0, 6

Order the Rational numbers:

33. 0.6, -1, -1.8, 0, 1.8

34. 5.2, -6.3, -5.8, 4.1, -6.1

35. 0.8, -0.2, 1, -1.1, 0, -0.7, 0.7

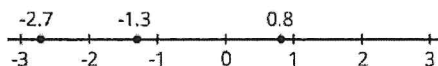
## Ordering Rational Numbers

To order rational numbers from least to greatest, we list them in the order they appear on the number line from left to right.

For example, we can see that the numbers

$$-2.7, -1.3, 0.8$$

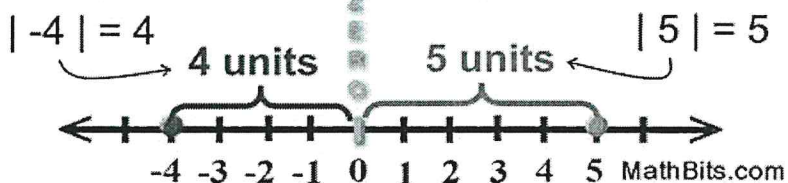
are listed from least to greatest because of the order they appear on the number line.



Use the absolute value to identify the value, add, or subtract.

## Absolute Value

The distance from the point to zero.



36.  $|5|$

37.  $|-7| + |-14| =$

38.  $|-41| - |18| + 12$

40.  $-13 + |-2 + 5| - 6$

39.  $-9 + 74 - |87 - 33 - 7| =$

41.  $|56| - |-21 - 10| - 8$

Compare using  $<$ ,  $>$ , or  $=$

42.  $|-4|$  \_\_\_\_\_  $|-5|$

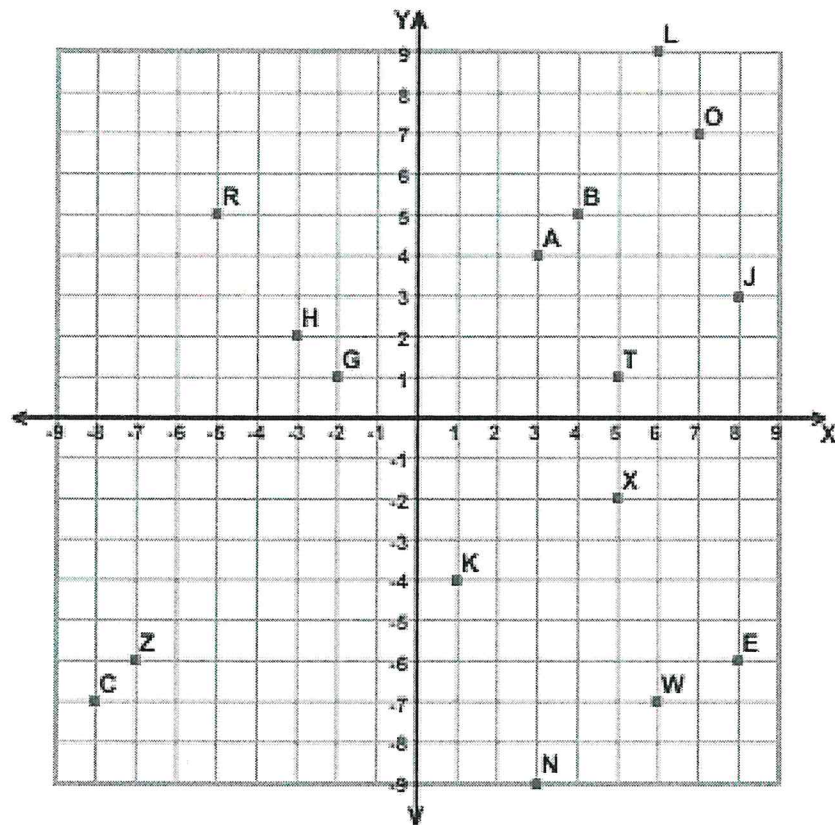
43.  $17$  \_\_\_\_\_  $|-17|$

44.  $|86|$  \_\_\_\_\_  $|-68|$

45.  $|-156|$  \_\_\_\_\_  $|-165|$

## Graphing

Remember, ordered pairs are in parenthesis separated by a comma.



Tell what point is located at each ordered pair.

46.  $(1, -4)$       47.  $(5, 1)$       48.  $(-3, 2)$       49.  $(-7, -6)$

Write the ordered pair for each given point.

50. W      51. R      52. C      53. L

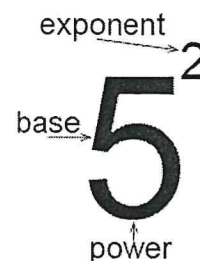
Plot the following points on the coordinate plane on the answer sheet.

54. Q  $(-2, -8)$       55. Y  $(8, -4)$       56. S  $(7, 0)$

# Numeric and Algebraic Expressions and Equations

Numeric equations have numbers and at least one operation sign. Algebraic equations have numbers, variables, and at least one operation sign. Both can be solved! But first, let's review some basics:

Exponents are special numbers that tell us how many times to use the base as a factor. The exponent "2" to the right tells us to use the base "5" as a factor twice  $5 \times 5$ .



Expand the following exponents:

57.  $3^2$                       58.  $4^3$                       59.  $10^3$

$5^2$  means  $5 \times 5$ . When we evaluate that, it equals 25.  
Evaluate the following exponents:

60.  $10^3$                       61.  $4^4$                       62.  $2^5$

Find the least common multiple (LCM) of 2 and 3.

The multiples of 2 are: **2, 4, 6, 8, 10, 12, 14, 16, 18...**

The multiples of 3 are: **3, 6, 9, 12, 15, 18....**

The common multiples of 2 and 3 are: **6, 12, 18...**

The least common multiple of 2 and 3 is **6**.

Find the least common multiple of each.

63. 2 and 7                      64. 4 and 10

When you find all the factors of two or more numbers, and you find some factors are the same ("common"), the largest of those common factors is the **Greatest Common Factor (GCF)**.

Find the greatest common factor of each.

What are the factors of 12?                      1, 2, 3, 4, 6, and 12

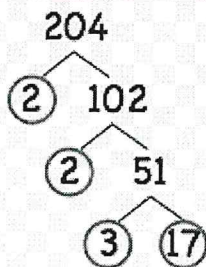
What are the factors of 20?                      1, 2, 4, 5, 10, and 20

Which are the common factors?                      1, 2, and 4

What is the GCF?                      4

65. 15 and 20                      66. 21 and 35

## Write the Prime Factorization



**$2 \cdot 2 \cdot 3 \cdot 17 = 204$**

Find the prime factorization of each.

67. 30                      68. 56

Evaluate Algebraic Expressions

Use the Distributive Property or simplify to evaluate algebraic expressions. Remember, we aren't looking for an "answer."

Example:  $4(h + 2) = 4h + 8$

Evaluate the following:

69.  $h(5 + 2)$

70.  $-4e(e - 2)$

Now, if we have the value of the variable, we can evaluate for an "answer."

Evaluate the following for  $h = 3$

71.  $4(h + 7)$

72.  $-4(h + 5)$

Balance both sides of the equation by using inverse operations to get the variable alone and find its value.

examples:

$$\begin{array}{r} x + 4 = 12 \\ -4 \quad -4 \\ \hline x = 8 \end{array}$$

$$\begin{array}{r} d - 7 = 10 \\ +7 \quad +7 \\ \hline d = 17 \end{array}$$

\*Be sure to make the same change to **both** sides of the equal sign.

73.  $x + 3 = 4$

74.  $x - 8 = 2$

75.  $4x = 16$

76.  $x/2 = 5$

Two Step Equations

Balance both sides of the equation by using inverse operations to get the variable alone and find its value.

examples:

$$\begin{array}{r} 2x + 5 = 21 \\ -5 \quad -5 \\ \hline 2x = 16 \\ \frac{2x}{2} = \frac{16}{2} \\ \hline x = 8 \end{array}$$

$$\begin{array}{r} 5 + \frac{y}{6} = 13 \\ -5 \quad -5 \\ \hline \frac{y}{6} = 8 \\ (6) \frac{y}{6} = 8(6) \\ \hline y = 48 \end{array}$$

\*Be sure to make the same change to **both** sides of the equal sign.

77.  $3z + 4 = 34$

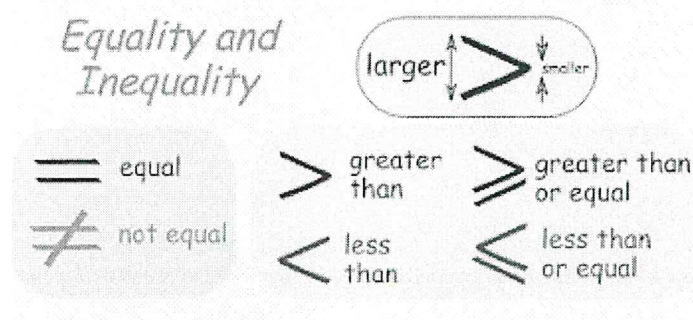
78.  $2a - 4 = 14$

79.  $x/4 - 3 = 2$

80.  $3a + 4 = 16$



# Inequalities



We solve inequalities very much the same way we solve equations. As long as we are using positive numbers, you can add, subtract, multiply, or divide both sides by the same number and the inequality will remain true.

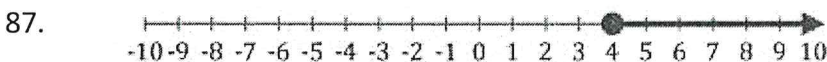
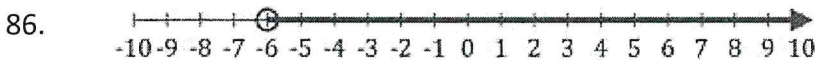
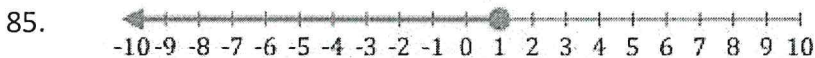
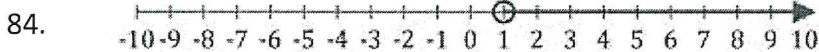
Solve these inequalities.

81.  $17 < -3x + 5$

82.  $-2x + 3 \geq 17$

83.  $9 > -3 + x/4$

We can identify inequalities on a graph. Write the inequality for each graph. Remember, open circle means we don't include the number, closed circle means we do.





# Understand and Use Ratio and Rate

## Ratios

A ratio is a comparison between the quantities of two things.

*Example:*

There are 3 triangles and 2 squares.



We can write the ratio as

3 : 2   or   3 to 2   or    $\frac{3}{2}$

Write each ratio three different ways. Be sure to simplify the fraction form.

88.    18 pounds to 22 pounds      89.    12 pints to 36 pints

90.    9 snow days out of 30 days

A **Unit Rate** makes a comparison to one unit.

**example:** 4 burgers for \$12  $\longrightarrow$  \$3 per burger

Find the unit rate for each problem.

91.    64 books on 4 shelves

92.    36 flowers in 3 bouquets

# Understand and Use Percent

## STEP 1: CONVERT FRACTION TO DECIMAL

$$\frac{3}{4}$$

$$3 \div 4$$

$$0.75$$

Divide the top  
number by the  
bottom

## STEP 2: CONVERT TO PERCENTAGE

Multiply the decimal  
by 100

$$0.75 \times 100$$

$$75$$

THAT'S IT!

The result as a percentage is:

75%

Fill in the missing fraction, decimal, or percent. Write fractions in simplest form.

Fraction	Decimal	Percent
1/10	(93)	(94)
(95)	0.2	(96)
(97)	(98)	75%
5/8	(99)	(100)
(101)	0.875	(102)
(103)	(104)	60%

## Percent of a Number

What is 35% of 80?

$$\frac{35}{100} \times 80 = 28$$

$$0.35 \times 80 = 28$$

Solve the following.

105. What is 6% of 300?

106. What is 68% of 700?

# Geometry and Probability

## Solve Area, Surface Area, and Volume Problems

### Formulas

Area of a triangle  $A = \frac{1}{2}bh$

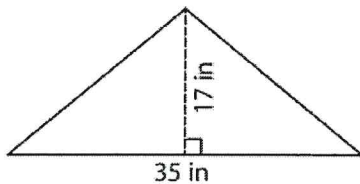
Area of a rectangle  $A = lw$

Area of a parallelogram  $A = bh$

Volume of a rectangular prism  $V = lwh$

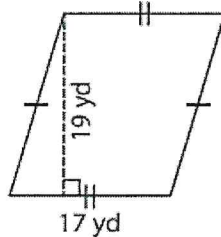
Remember to include units in your answer.

1)



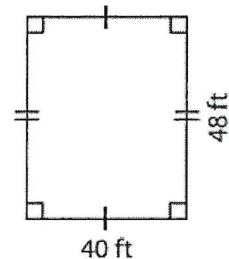
Area = \_\_\_\_\_

2)



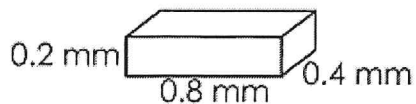
Area = \_\_\_\_\_

3)



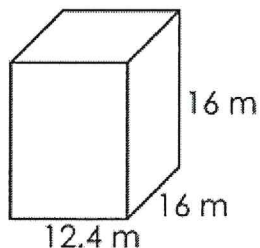
Area = \_\_\_\_\_

a.



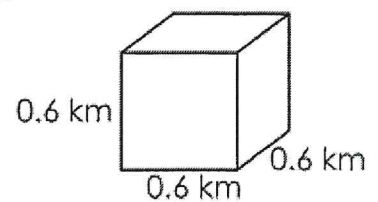
$V =$  \_\_\_\_\_

b.



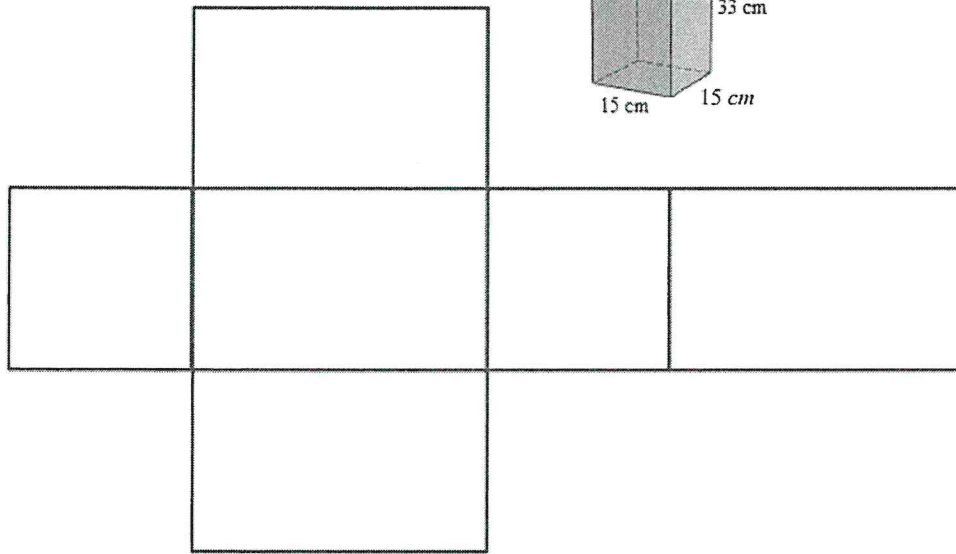
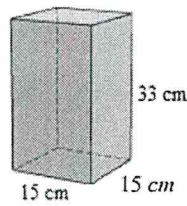
$V =$  \_\_\_\_\_

c.



$V =$  \_\_\_\_\_

1. Find the Surface Area of the Rectangular Prism.



## Display, Describe, and Summarize Data

<p><b>Median</b> (Middle)</p> <p><i>The number which is in the middle or the middle value.</i></p> <p>11 7 11 18 9 7 6 23 7 6 7 7 7 9 11 11 18 23</p> <p>Median: 9</p>	<p><b>Mode</b> (Most)</p> <p><i>The number that appears the most.</i></p> <p>11 7 11 18 9 7 6 23 7 6 7 7 7 9 11 11 18 23</p> <p>Mode: 7</p>
<p><b>Mean</b> (Average)</p> <p><i>The total of the numbers divided by how many numbers there are.</i></p> <p>11 7 11 18 9 7 6 23 7 <math>11+7+11+18+9+7+6+23+7=99</math> <math>99 / 9 = 11</math></p> <p>Mean: 11</p>	<p><b>Range</b> (Difference)</p> <p><i>The difference between the largest and the smallest number.</i></p> <p>11 7 11 18 9 7 6 23 7 Large : 23   Small : 6 <math>23 - 6 = 17</math></p> <p>Range: 17</p>

Find the mean, median, mode, and range for the data set below.

13, 6, 24, 18, 33, 5, 13, 49, 9, 11, 36, 28, 15, 6, 13

1. mean =                      2. median =                      3. mode =                      4. range =

- |           |                    |              |
|-----------|--------------------|--------------|
| 1. _____  | 28. _____          | 55. On graph |
| 2. _____  | 29. _____          | 56. On graph |
| 3. _____  | 30. _____          | 57. _____    |
| 4. _____  | 31. _____          | 58. _____    |
| 5. _____  | 32. On number line | 59. _____    |
| 6. _____  | 33. _____          | 60. _____    |
| 7. _____  | 34. _____          | 61. _____    |
| 8. _____  | 35. _____          | 62. _____    |
| 9. _____  | 36. _____          | 63. _____    |
| 10. _____ | 37. _____          | 64. _____    |
| 11. _____ | 38. _____          | 65. _____    |
| 12. _____ | 39. _____          | 66. _____    |
| 13. _____ | 40. _____          | 67. _____    |
| 14. _____ | 41. _____          | 68. _____    |
| 15. _____ | 42. _____          | 69. _____    |
| 16. _____ | 43. _____          | 70. _____    |
| 17. _____ | 44. _____          | 71. _____    |
| 18. _____ | 45. _____          | 72. _____    |
| 19. _____ | 46. _____          | 73. _____    |
| 20. _____ | 47. _____          | 74. _____    |
| 21. _____ | 48. _____          | 75. _____    |
| 22. _____ | 49. _____          | 76. _____    |
| 23. _____ | 50. _____          | 77. _____    |
| 24. _____ | 51. _____          | 78. _____    |
| 25. _____ | 52. _____          | 79. _____    |
| 26. _____ | 53. _____          | 80. _____    |
| 27. _____ | 54. On graph       | 81. _____    |

82. \_\_\_\_\_

83. \_\_\_\_\_

84. \_\_\_\_\_

85. \_\_\_\_\_

86. \_\_\_\_\_

87. \_\_\_\_\_

88. \_\_\_\_\_

89. \_\_\_\_\_

90. \_\_\_\_\_

91. \_\_\_\_\_

92. \_\_\_\_\_

93. \_\_\_\_\_

94. \_\_\_\_\_

95. \_\_\_\_\_

96. \_\_\_\_\_

97. \_\_\_\_\_

98. \_\_\_\_\_

99. \_\_\_\_\_

100. \_\_\_\_\_

101. \_\_\_\_\_

102. \_\_\_\_\_

103. \_\_\_\_\_

104. \_\_\_\_\_

105. \_\_\_\_\_

106. \_\_\_\_\_

3. \_\_\_\_\_

A. \_\_\_\_\_

B. \_\_\_\_\_

C. \_\_\_\_\_

Surface Area of a Rectangular

Prism Answer

\_\_\_\_\_

Mean, Median, Mode

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

Geometry and Probability

1. \_\_\_\_\_

2. \_\_\_\_\_

32. Draw and label the number line in this space.

Answer questions 54 through 56 on this graph. Be sure to label each point.

