Integers – Addition

RULE	EXAMPLE
Same Signs • Ignore the signs and add the numbers • If both numbers are positive, the sum is positive • If both numbers are negative, the sum is negative	$5 + 8 = 13$ $(–5) + (–8) = –13$
Different Signs • Subtract the absolute values • The sign of the sum is the same as the integer with the greater absolute value	$5 + (–8) = –3$ $–5 + 8 = 3$

Find each sum. Show your work.

1) $– 4 + (– 8) =$	2) $14 + 16 =$	3) $– 43 + (–12) =$
4) $–16 + 11 =$	5) $28 + (– 42) =$	6) $75 + (–5) =$
7) $–49 + (–32) =$	8) $23 + (–23) =$	9) $86 + (–18) =$

Integers – Subtraction

RULE	EXAMPLE	
• Change the minus sign to a plus • Find the opposite of the 2nd number • Add, using your rules for adding integers	5 – 8 5 + (– 8) – 3	– 9 – (–12) - 9 + 12 3

Find each difference. Show your work.

1) 4 – 7 =	2) –5 – 3 =	3) –8 – 2 =
4) –3 – 24 =	5) 10 – 17 =	6) 13 – 9 =
7) –41 – 37 =	8) 62 – (–29) =	9) –6 – (–6) =

Integers – Multiplying and Dividing

RULE	EXAMPLE	
• Multiply or divide using the absolute value of both numbers • If the original signs are the same (both positive or both negative), the answer is positive • If the original signs are different (one positive and one negative), the answer is negative	- 5 x (- 8) = 40 40 ÷ 4 = 10	16 x (- 3) = - 48 - 20 ÷ 10 = - 2

Find each product or quotient. Show your work.

1) –3 x (– 8) =	2) –5 x (–5) =	3) –15 x 3 =
4) 0 x (–121) =	5) –35 ÷ (–7) =	6) –65 ÷ 5 =
7) 240 ÷ (–4) =	8) 36 ÷ 12 =	9) (–49 ÷ 7) x 8 =

Integers – Problem Solving

Solve the problems using the 4-step Plan. Show all your work, labeling each step and labeling your answer with the correct units.

1) Rita opened a checking account with a balance of $150. She wrote 2 checks: $87 and $68. How much money remained in the account?

READ	
I know that . . .	I need to find out . . .

PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .

SOLVE	CHECK
Show your work	My answer is reasonable because . . .

FINAL ANSWER	
I found out that . . .	

2) The water level in a tank decreased 10 centimeters in 5 minutes. If the tank drains at a steady rate, what is the change in the water level each minute?

READ	
I know that . . .	I need to find out . . .

PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .

SOLVE	CHECK
Show your work	My answer is reasonable because . . .

FINAL ANSWER
I found out that . . .

Fractions – Adding and Subtracting

RULE	EXAMPLE
Denominators the same • Add or subtract the numerators • Write the sum or difference over the denominator • Simplify the fraction, if necessary	$^2/_8 + {}^4/_8 = {}^6/_8$ $^6/_8 = {}^3/_4$
Denominators are different • Find the least common denominator (LCD) • Write equivalent fractions using the LCD • Rewrite equation with the equivalent fractions • Finish solving using the steps above	$^5/_6 + {}^3/_8$ LCD = 24 $^5/_6 = {}^{20}/_{24}$ $^3/_8 = {}^9/_{24}$ $^5/_6 + {}^9/_{24} = {}^{29}/_{24}$ $^{29}/_{24} = 1\ ^5/_{24}$

Find each sum or difference. Simplify the answer. Show your work.

1) $^2/_7 + {}^3/_8 =$	2) $^1/_6 + {}^2/_5 =$	3) $^5/_{16} - {}^2/_9 =$
4) $^3/_4 - {}^5/_{12} =$	5) $3\ ^6/_7 + 4\ ^1/_8 =$	6) $4\ ^3/_5 - 2\ ^2/_3 =$

Fractions – Multiplying

RULE	EXAMPLES	
• Write any mixed numbers as an improper fraction • Multiply the numerators • Multiply the denominators • Reduce, if necessary	$^3/_{10}$ x $^2/_3$ = $^6/_{30}$ $^6/_{30}$ = $^1/_5$	$3\ ^5/_8$ x $^3/_7$ $^{29}/_8$ x $^3/_7$ = $^{87}/_{56}$ $^{87}/_{56}$ = $1\ ^{31}/_{56}$

Find each product. Simplify the answer. Show your work.

1) $^1/_3$ x $^1/_3$ =	2) $^2/_9$ x $^3/_8$ =	3) $^3/_{10}$ x $^2/_3$ =
4) $1\ ^3/_4$ x 7 =	5) $8\ ^5/_6$ x 2 =	6) $^4/_5$ x $^1/_3$ x $^5/_{12}$ =
7) $2\ ^1/_4$ x $^3/_6$ =	8) $2^4/_5$ x $6^1/_2$ x $1^2/_7$ =	9) $4\ ^4/_5$ x $3\ ^3/_4$ =

Fractions – Dividing

RULE	EXAMPLE	
• Write any mixed numbers as an improper fraction • Change the 2nd fraction to its reciprocal • Multiply • Simplify, if necessary	$3/10 \div 2/3$ $3/10 \text{ x } 3/2 = 9/20$	$3\,5/8 \div 3/7$ $29/8 \div 3/7$ $29/8 \text{ x } 7/3 = 203/24$ $203/24 = 8\,11/24$

Find each quotient. Simplify the answer. Show your work.

1) $1/3 \div 1/6 =$	2) $5/8 \div 1/16 =$	3) $5/12 \div 3/16 =$
4) $2 \div 1\,1/4 =$	5) $5\,1/3 \div 8 =$	6) $6\,4/9 \div 18 =$
7) $1\,1/3 \div 2\,5/6 =$	8) $11\,3/4 \div 5\,3/4 =$	9) $6\,3/7 \div 1\,1/2 =$

Fractions – Problem Solving

Solve the problems using the 4-step Plan. Show all your work, labeling each step and labeling your answer with the correct units.

1) The length of the bicycle race track is $^5/_8$ miles. The first $^1/_5$ mile is hilly, and the rest is flat. What fraction of the course is flat?

READ	
I know that . . .	I need to find out . . .

PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .

SOLVE	CHECK
Show your work	My answer is reasonable because . . .

FINAL ANSWER
I found out that . . .

2) The cooking instructions for a turkey recommend roasting the turkey at a low temperature for $3/4$ hours for each pound. How long should you cook a 10 ½ pound turkey?

READ	
I know that . . .	I need to find out . . .

PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .

SOLVE	CHECK
Show your work	My answer is reasonable because . . .

FINAL ANSWER
I found out that . . .

Decimals – Adding and Subtracting

RULE	EXAMPLE
• Line up the decimal points • Add zeros if necessary • Add or subtract NOTE: Remember to bring down your decimal point into your answer!	33.4 – 3.82 $\begin{array}{r} 33.40 \\ -\ \ 3.82 \\ \hline 29.58 \end{array}$

Find each sum or difference. Show your work.

1) 3.956 + 2.41 =	2) 0.0589 + 0.278 =	3) 117 + 105.02 =
4) 6.788 – 0.2 =	5) 3.24 – 0.51 =	6) 117 – 105.0023 =

Decimals – Multiplying

RULE	EXAMPLE
• Multiply as you would whole numbers • Count the number of digits to the right of the decimal point in each number • In you answer, count from the right to the left that number of place and put your decimal point NOTE: Remember, do NOT line up the decimal points when setting up your problem!	62.8 x 0.93 6 2 . 8 1 decimal place x . 9 3 2 decimal places 1 8 8 4 5 6 5 2 0 5 8 . 4 0 4 3 decimal places

Find each product. Show your work.

1) 0.6 x 0.8 =	2) 0.9 x 0.27 =	3) 18.3 x 0.67 =
4) 7.2 x 5.4 =	5) 8.4 x 0.003 =	6) 0.04 x 0.3 =

Decimals – Dividing

RULE	EXAMPLE
• Change the divisor to a whole number by moving the decimal point to the right • Move the decimal point in the dividend the same number of places. Add zeros if necessary • Put the decimal point in place in the quotient • Divide	$3.9 \div 0.13$ $$\begin{array}{r} 3\,0. \\ .13\overline{\smash{)}3.\,9\,0.} \\ \underline{3\ 9} \\ 0\ 0 \end{array}$$

Find each quotient. Show your work.

1) 82 ÷ 0.4 =	2) 2.38 ÷ 3.5 =	3) 121.8 ÷ 1.4 =
4) 0.0092 ÷ 8 =	5) 149.73 ÷ 0.23 =	6) 2.004 ÷ 0.2 =

Decimals – Problem Solving

Solve the problems using the 4-step Plan. Show all your work, labeling each step and labeling your answer with the correct units.

1) Megan has $80 to spend on clothes for school. After looking at the ads, she decides to buy two pairs of jeans for $29.99 each and two tank tops for $8.18 each. Does she have enough money to buy three new hair clips that are on sale 3 for $10?

READ	
I know that . . .	I need to find out . . .

PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .

SOLVE	CHECK
Show your work	My answer is reasonable because . . .

FINAL ANSWER
I found out that . . .

2) Paula calls her grandparents long distance in California and talks for 45 minutes. The phone company charges $0.05 per half-minute. How much does the call cost?

READ	
I know that . . .	I need to find out . . .

PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .

SOLVE	CHECK
Show your work	My answer is reasonable because . . .

FINAL ANSWER
I found out that . . .

Ratios and Proportions

A **ratio** is a comparison of any two quantities. A **proportion** is an equation that compares two ratios. This concept is often used to solve for an unknown. One method of solution would then by to cross-multiply the numbers.

Example: If you're driving at 60 miles per hour for five hours, how many miles will you travel?

Steps	
• Set up the proportion with the same units in the numerator and the same units in the denominator.	$\dfrac{60 \text{ miles}}{1 \text{ hour}} = \dfrac{x \text{ miles}}{5 \text{ hours}}$
• Cross multiply. Multiply the denominator on the left by the numerator on the right. Multiply the other 2 numbers.	$1 \cdot x = 60 \cdot 5$
• Solve the equation	$x = 300$
	Solution: You will travel 300 miles.

Identify each set of ratios as equivalent or not equivalent. Show your work.

1) $\dfrac{5}{7}$ and $\dfrac{15}{21}$	2) $\dfrac{12}{11}$ and $\dfrac{24}{22}$	3) $\dfrac{6}{7}$ and $\dfrac{12}{21}$
The ratios are _____	The ratios are _____	The ratios are _____

Identify an equivalent ratio. Show your work.

4) $\dfrac{7}{5} =$	5) $\dfrac{8}{9} =$	6) $\dfrac{7}{12} =$

Unit Price

Rates are special ratios where the two things being compared have different units. **Unit Price** is the cost of a single unit. For example, we could compare the price of purchasing things to the number of things bought. An example of a rate would be $16 for 8 red peppers. This rate can be used to find the unit price.

$$\text{Example:} \quad \frac{\$16}{8 \text{ peppers}} = \frac{16 \div 8}{8 \div 8} = \frac{2}{1} = \$2 \text{ per pepper}$$

Find the unit price of each item described. Round each price to the nearest cent. Show all your work.

1) 1 dozen doughnuts for $4.50	2) 36 oz of peanut butter for $4.39	3) 3.5 lb. of cheese for $8.94
_____ per doughnut	_____ per ounce	_____ per pound
4) 18 issues of a magazine for $28.90	5) 5 lb. of potatoes for $2.19	6) 25 greeting cards for $7.95
_____ per issue	_____ per pound	_____ per card

Ratios, Proportions and Unit Price – Problem Solving

Solve the problems using the 4-step Plan. Show all your work, labeling each step and labeling your answer with the correct units.

1) The bakers at Healthy Bakery can make 150 bagels in 2 hours. How many bagels can they bake in 14 hours? What was that rate per hour?

READ	
I know that . . .	I need to find out . . .

PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .

SOLVE	CHECK
Show your work	My answer is reasonable because . . .

FINAL ANSWER
I found out that . . .

2) You can buy 3 apples at the Quick Market for $1.14. You can buy 5 of the same apples at the Stop and Save for $2.45. Which place is the better buy?

READ	
I know that . . .	I need to find out . . .

PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .

SOLVE	CHECK
Show your work	My answer is reasonable because . . .

FINAL ANSWER
I found out that . . .

Percent – Conversions

RULE	EXAMPLE
Fraction to percent • Change the fraction to a decimal (numerator ÷ denominator) • Change to decimal to a percent (multiply by 100) • Label with a percent sign	$^3/_8$ $3 \div 8 = .375$ $.375 \times 100 = 37.5\%$
Percent to fraction • Write the number over 100 (no % symbol) • Reduce the fraction	15% $^{15}/_{100}$ $^{15}/_{100} = {}^3/_{20}$

Express each fraction as a percent. Express each percent as a fraction. Show your work.

1) $^{24}/_{25} =$	2) $^2/_5 =$	3) $^{40}/_{125} =$	4) $^2/_3 =$
5) 20%	6) 72%	7) 70%	8) 2%

Percent of a Number

RULE	EXAMPLE
Percent Proportion $$\frac{\text{Part}}{\text{Whole}} = \frac{\%}{100}$$ • Identify the part, whole, and /or percent • Plug the numbers into the proportion and solve	What number is 25% of 520? Percent = 25, Whole = 520 $$\frac{P}{520} = \frac{25}{100}$$ $$100P = 520 \text{ x } 25$$ $$100P = 13{,}000$$ $$P = 13{,}000 \div 100$$ $$P = 130$$ 130 is 25% of 520

Use a proportion to solve each problem (round your answer to the nearest tenth if necessary). Show your work.

1) What number is 60% of 72?	2) Find 92% of 120.	3) 25 is what % of 40?
4) 64 is 50% of what number?	5) 2 is 40% of what number?	6) 55 is what % of 60?

Percent of Change

RULE	EXAMPLE
Change Proportion $$\frac{\text{Increase/Decrease}}{\text{Original Number}} = \frac{\%}{100}$$ • Find the amount of increase or decrease • Plug the numbers into the proportion and solve	Old: 8 New: 15 15 – 8 = 7 increase $$\frac{7}{8} = \frac{P}{100}$$ 7 x 100 = 8P 700 = 8P 700 ÷ 8 = P P = 87.5 There was an 87.5% increase

Find the percent of change. Use a proportion to solve each problem (round your answer to the nearest tenth percent if necessary). Show your work.

1) Old: $4 New: $7	2) Old: 36 New: 18	3) Old: $6.80 New: $8.20
4) Old: $150 New: $126	5) A book is on sale for $14. The original price of the book was $20. Find the percent of the discount.	

Percent – Problem Solving

Solve the problems using the 4-step Plan. Show all your work, labeling each step and labeling your answer with the correct units.

1) Mr. Treed bought his son a new bicycle that cost $198. The store required a 15% down payment to hold the bike. How much was the down payment?

READ	
I know that . . .	I need to find out . . .

PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .

SOLVE	CHECK
Show your work	My answer is reasonable because . . .

FINAL ANSWER	
I found out that . . .	

2) Mrs. Miller bought a new suit that cost $175. She bought it when it was on sale for 40% off. What was the original price of the suit?

READ	
I know that . . .	I need to find out . . .

PLAN	
Create a Representation (picture, diagram, table)	I will choose the problem-solving strategy . . .

SOLVE	CHECK
Show your work	My answer is reasonable because . . .

FINAL ANSWER
I found out that . . .

Writing Expressions and Equations

The table shows phrases written as mathematical expressions.

Phrase	Expression		Phrase	Expression
• 8 more than a number • the sum of 8 and a number • a number plus 8 • a number increased by 8	$x + 8$		• 7 subtracted from a number • a number minus 7 • 7 less than a number • a number decreased by 7	$h - 7$
• 3 multiplied by n • 3 times a number • the product of 3 and a number	$3n$		• a number divided by 5 • the quotient of a number divided by 5 • divide a number by 5	$t/5$

Write an expression or equation for each phrase.

1) 12 more than a number	2) The quotient of a number divided by 9
3) 15 less than a number	4) The product of 4 times a number minus 8
5) A number plus 14 equals 25	6) The product of 5 and y added to 3 is 33
7) 3 more than 5 times the number of dogs is 18 dogs	8) Steve had an unknown amount of money in his pocket. He then lost $23. What is the expression that shows how much money he has now?
9) Ryan weighs 6 times as much as his dog. What is an expression for Ryan's weight if you call his dog's weight n?	10) Fritz is 6 years older than twice his brother's age. What is an expression for Fritz's age if his brother's age is called n?

Order of Operations

One acronym for remembering the order of operations is **PEMDAS**. A popular expression for remembering this is **P**lease **E**xcuse **M**y **D**ear **A**unt **S**ally.

P – parentheses

E – exponents

M – multiplication

D – division

These operations are equal. Moving left to right they are solved in the order they occur.

A – addition

S – subtraction

These operations are equal. Moving left to right they are solved in the order they occur.

Another acronym for remembering the order of operations is **GEMS**.

G – groupings (parentheses, brackets, braces)

E – exponents and roots

M – multiplication/division – moving left to right as they occur

S – subtraction/addition – moving left to right as they occur

- The fraction bar means division
- The raised dot means multiplication
- Numbers written next to parenthesis or parentheses next to each other require multiplication.

Find the numerical value of the following expressions using the correct order of operations. Show your work step-by-step.

1) 9 x 5 – 4 + 3 x 4 = _____	2) 12 + 8 x 6 ÷ 2 x 8 = _____

3) $22 \div 11 + 12 - 3 =$ _____

4) $88 \div 11 + 56 \div 8 + 12 - 5 =$ _____

5) $5(8) - {}^{30}/_5 + 4 \times 3 =$ _____

6) $8(9) + 10 \cdot 5 + 8 \cdot 2 =$ _____

7) $(7)(9) + {}^9/_3 - 20 \cdot 3 =$ _____

8) $17 + 5 - 6 \cdot 4 + {}^{12}/_3 =$ _____

9) $3 + 8 \cdot 10 - 13 \times 3 =$ _____

10) $9 + {}^{44}/_4 - 8 \cdot 2 + 20 - 3 =$ _____

Function Table

Complete the table by filling in the missing number. Then, write the equation.

1)

x	y
1	6
2	
3	8
4	9
5	10

Equation:

2)

x	y
11	2
12	3
13	4
14	5
15	

Equation:

3)

x	y
12	
18	3
24	4
30	5
36	6

Equation:

4)

x	y
1	8
2	16
3	24
4	
5	40

Equation:

5)

x	y
1	1
2	4
3	7
4	10
5	

Equation:

6)

x	y
1	6
2	11
3	
4	21
5	26

Equation:

Properties of Operations

Associative Property of Addition	The grouping of addends does not change the sum: $(a + b) + c = a + (b + c)$
Associative Property of Multiplication	The grouping of factors does not change the product: $(ab) c = a (bc)$
Commutative Property of Addition	The order of addends does not change the sum: $a + b = b + a$
Commutative Property of Multiplication	The order of factors does not change the product: $ab = ba$
Distributive Property	The product of a factor and a sum is equal to the sum of the products: $a(b + c) = ab + ac$
Identity Property of Addition	The sum of any number and 0 is that number: $a + 0 = a$
Identity Property of Multiplication	Any number multiplied by one equals that number: $a \times 1 = a$
Zero Product Property	The product of any number and zero is zero: $a \times 0 = 0$

Fill in the missing number below and tell which property the problem demonstrates.

1) 51 x _____ = 51 Property:	2) 71 + (_____ + 5) = (71 + 90) + 5 Property:
3) 115 x _____ = 23 x 115 Property:	4) 0 + 78 = _____ Property:
5) 17 x (5 x 12) = (_____ x 5) x 12 Property:	6) 54 + 60 = 60 + _____ Property:

Graphing on the Coordinate Plane

Directions:
- Graph each ordered pair on the coordinate grid.
- Write the letter next to the point.
- Identify the quadrant where the point is located.

1) A (–4, –1) Quadrant	2) B (4, 1) Quadrant	3) E (2, 2) Quadrant
4) F (–2, 5) Quadrant	5) G (–2, –5) Quadrant	6) H (–1, 4) Quadrant
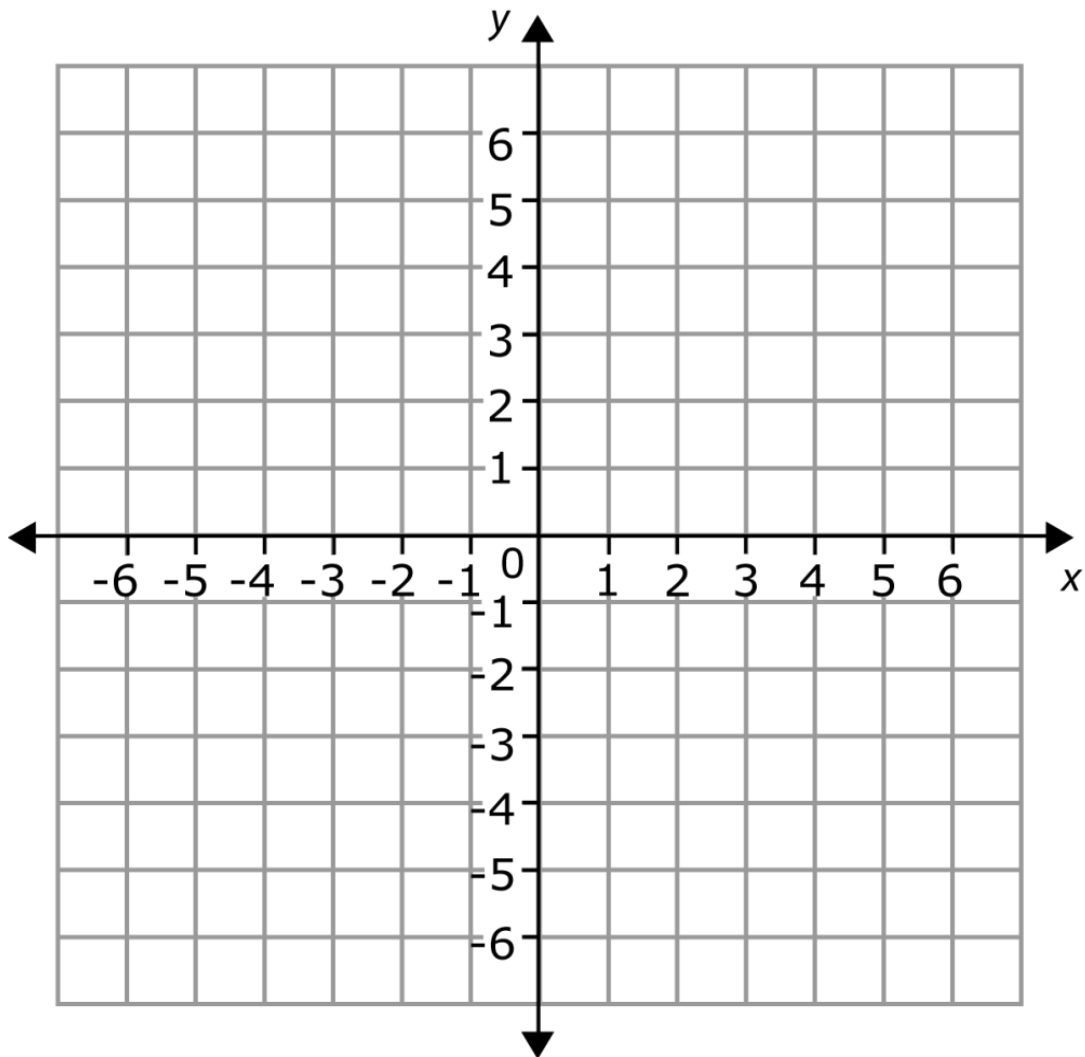
Measures of Center

RULE	EXAMPLE
Range • the difference between the largest and smallest values • place your data in order, subtract the smallest from the largest	2 3 5 9 11 11 – 2 = 9
Mean • the average of a set of numbers • add up all the numbers in a set of data and then divide by the number of items in the set	the mean of 2 3 5 9 11 (2 + 3 + 5 + 9 + 11) / 5 30 / 5 = 6
Median • the middle of a set of numbers • place your data in order, and the number in the exact center of a list is the median	the median of 1 2 3 4 5 6 7 4 because it's in the center, with three numbers on either side
Mode • the most common number in a set of data • a data set can have no mode, one, or many • put the numbers in order; count how many times each number appears	1 2 2 3 5 6 the mode is 2 1 2 3 4 5 6 there is no mode 1 1 2 3 3 the modes are 1, 3

Complete the problems. Show all your work**.**

1) Five baseball players hit these many home runs in a season: 36, 25, 45, 23, 8. What is the median for these data?	2) Students received these test scores: 96%, 88%, 52%, 75%, 82%, 91%, 75%. What is the mean?

3) I have 5 numbers. The mean for these numbers is 12. What is the sum of the numbers?	4) These numbers were on a lottery ticket: 18, 33, 42, 17, 26. What is the range?
5) I scored these points in 8 basketball games: 20, 20, 16, 21, 15, 20, 14, 10. Find the range, mean, median and mode.	6) I earned these amounts: $2.50, $3.75, $6.20, $3.75, $8.00, $5.75. How much greater is the mean than the mode?
Range = _____ Median = _____ Mean = _____ Mode = _____	The mean is _____ greater than the mode.

Box–and–Whisker Plots

Use the Box-and-Whisker Plots to answer the questions.

Ages of Dogs in the Dog Show (years)
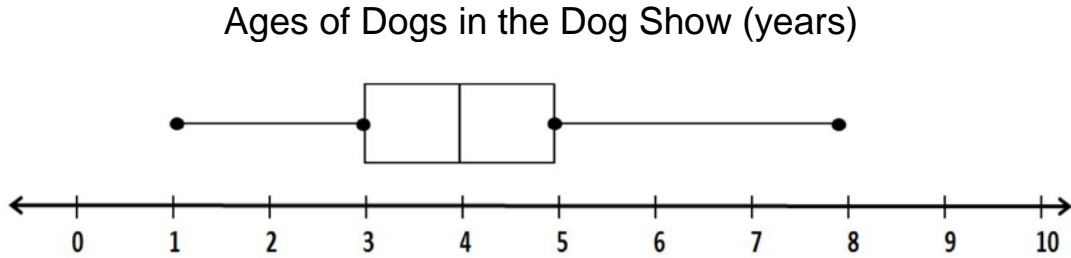
1) What is the median age of the dogs?	2) What number is the lower quartile?
3) What is the inter-quartile range?	4) About what fraction of the dogs are 5 years old or older?

Algebra Test Scores
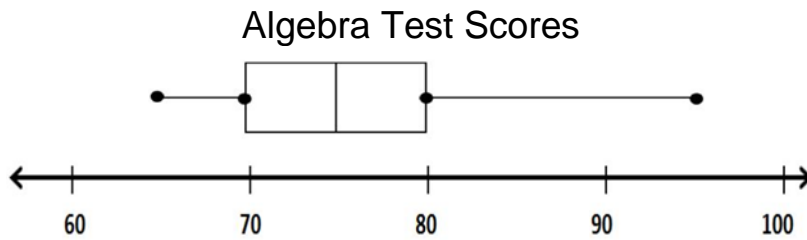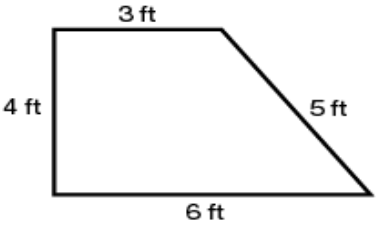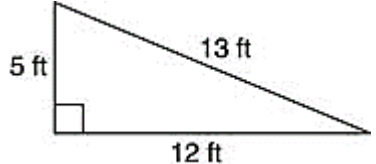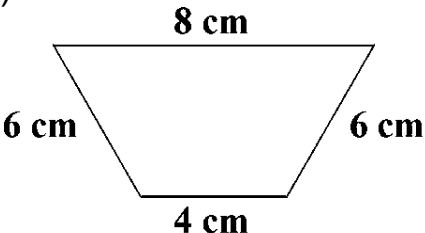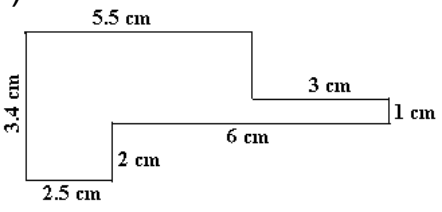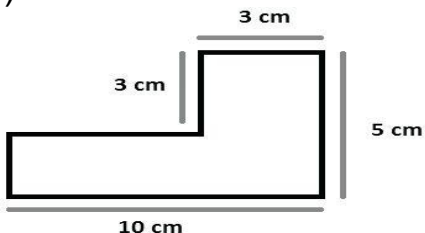
6) What is the range of the test scores?	7) What is the median of all scores?
8) What percent of the scores are between 70% and 80%?	9) What fraction of the scores fall between 80% and 95%?

Geometry Connection: Perimeter

Remember: perimeter refers to the sum (+) of all of the outside edges of a figure.
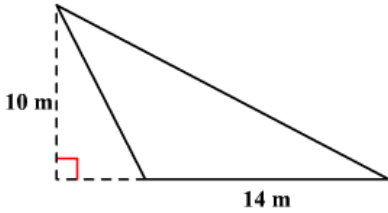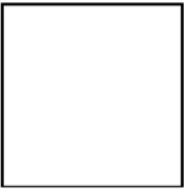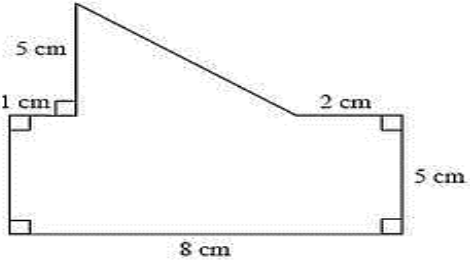
Find the perimeter of each figure shown or described below. Show all your work. Be sure to include the correct units in your answer.

1) 3 ft 4 ft 5 ft 6 ft	2) 5 cm 3 cm	3) 5 ft 13 ft 12 ft
4) 8 cm 6 cm 6 cm 4 cm	5) 5.5 cm 3.4 cm 3 cm 1 cm 2 cm 6 cm 2.5 cm	6) 3 cm 3 cm 5 cm 10 cm
7) Find the perimeter of a square with side $14\frac{1}{2}$ inches.	8) Find the perimeter of a triangle with sides 4 inches, $8\frac{1}{2}$ inches, and $9\frac{1}{4}$ inches.	9) Find the perimeter of a rectangle: l = 6 yards w = 4 yards.

Geometry Connection: Area

Area Formulas	
Square: $A = s^2$	Parallelogram: $A = b \cdot h$
Rectangle: $A = l \cdot w$	Triangle: $A = \frac{1}{2}(b \cdot h)$

Find the area of each figure. Show all your work (write the formula, substitute numbers and calculate). Make sure you include the correct units in your answer.
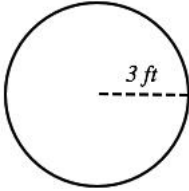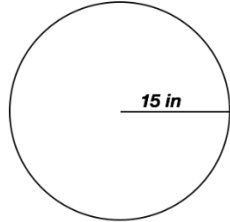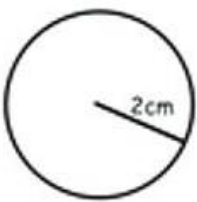
1)

8 yards

3 yards

2)

10 m

14 m

3)

10 in

6 in

5 in

4)

10 cm

10 cm
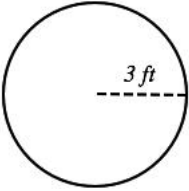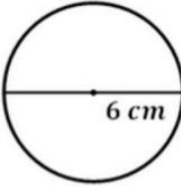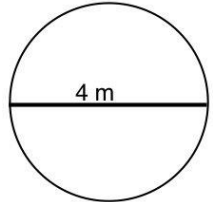
5) Draw a line to decompose the shape and then solve.

5 cm

1 cm

2 cm

5 cm

8 cm

Geometry Connection: Circles

- **circumference**: **C**, the distance around the outside (perimeter) of a circle
- **radius**: **r**, the distance from its center to any point on its outer edge
- **diameter**: **d**, the length of a straight line through the circle's center that touches any two points on the outer edge
- A circle's radius is always exactly half its diameter. $r = d \div 2$
- The diameter is always 2 times the radius. $d = 2 \times r$
- The value of pi (π) is 3.14
- Formulas for circumference: $C \approx 2 \pi r$ or $C \approx \pi d$
- Formula for area: $A = \pi r^2$

Solve each problem. Show all your work (write the formula, substitute numbers and calculate). Make sure you include the correct units in your answer.

| 1) Find the circumference.	2) Find the area.	3) Find the circumference.
3 ft	*3 ft*	15 in
4) Find the area.	5) Find the circumference.	6) Find the area.
2cm	6 cm	4 m

Geometry Connection: Prisms

- The surface area of a three-dimensional figure is the sum of the areas of all its faces.
- Volume is the amount of space inside a three-dimensional figure.
- Volume = Length × Width × Height

Find the surface area or volume of each rectangular prism. Round decimal answers to the nearest tenth. Show all your work.
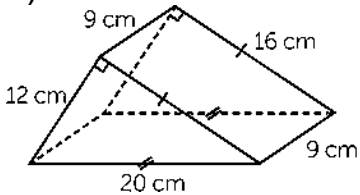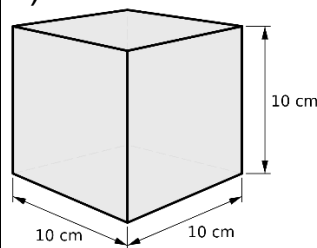
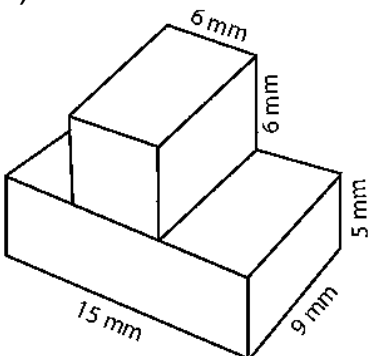| 1) Find the volume.	2) Find the surface area.
32 cm 15 cm 18 cm	7 in. 7 in. 9 in.
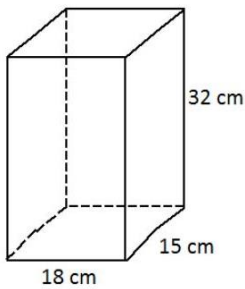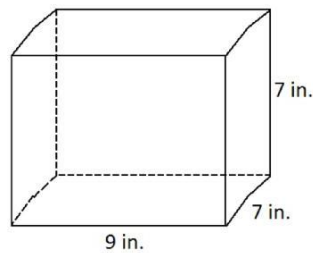
3) Find the surface area.	4) Find the volume.
9 cm 16 cm 12 cm 9 cm 20 cm	10 cm 10 cm 10 cm

5) Find the surface area.

6 mm
6 mm
5 mm
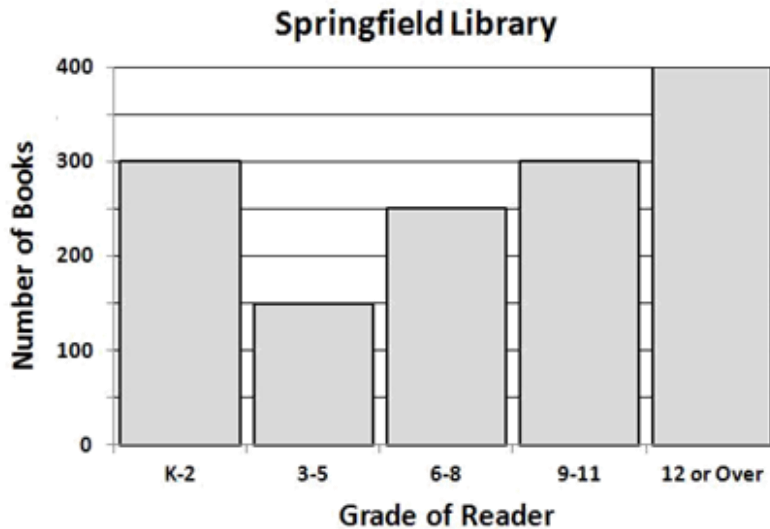15 mm
9 mm

Histograms

A **histogram** is a graph that shows how many items occur between two numbers.

The Springfield Library has books arranged by grade level.

Springfield Library

Use the histogram above to answer each question. Show all your work for numbers 4-6.

1) How many books are there for grades 3-5?	2) Which grade levels have the greatest number of books?	3) Which grade levels have the fewest number of books?
4) How many books are there for students in grade 6 and above?	5) How many books are in the Springfield Library?	6) What percent of all of the books in the histogram are for grades 9 and above?