Math I

Student/Parent Guide

This guide will be sent to you throughout the term to help guide you and your child through Math I. As the term progresses, a new unit outline, terminology, and sample tests will be added. If you have any questions about your child's progress, please contact his/her teacher.

How does Math I Look in Your Child's Classroom?

- **Students will be doing more than arithmetic:** Students will be seeing that math is much more than arithmetic (knowing the facts and number operations): it involves estimation, algebra, geometry, probability, statistics, and more.

- **Students will be striving to achieve high goals:** Students will be achieving high standards of understanding, complexity, and accuracy set for them by their parents, teachers, schools, and the state of Georgia.

- **Students will be actively involved in the study of mathematics**: Students will be doing tasks that involve investigations. They will be talking and writing explanations for their thinking.

- **Students will be working with one another:** Students will be collaborating to make discoveries, draw conclusions, and discuss math.

- **Students will be evaluated in a variety of ways:** Teachers will use many different ways to determine if children know and understand math concepts. Some of these will include writing samples, projects, or written tests. Not all evaluation will be the same for every classroom or every child.

- **Students will be using calculators to solve problems:** They will be using calculators not as crutches but as tools to solve more complex problems with bigger numbers than they could do otherwise.

Helping Your Child Achieve in Math I

- **Positive attitudes about math will reinforce encouragement.** Your feeling will have an impact on how your children think about math and themselves as mathematicians. Positive attitudes about math are important in encouraging your child to think mathematically.

- **The unit outline will help your child preview upcoming material.** Even if all of the material is new to you, discuss with your child what they will be learning and tell them that you are looking forward to learning with them.

- **The terminology will help familiarize your child with the language of mathematics.** These words can be thought of as a spelling list for the students, where knowing the definition is important.

- **The practice test is a great review and helps alleviate test anxiety.** Before the end of unit assessment, make sure that your child has worked through the practice assessments and encourage him/her to ask the teacher questions about any problems that seem difficult or confusing.

Unit 1 Outline

I. Students will explore and interpret the characteristics of functions (mathematical formulas), using graphs, tables and simple algebraic techniques.

A. Basic Functions that Students MUST know.

$f(x) = x$

$f(x) = x^2$

$f(x) = x^3$

$f(x) = \sqrt{x}$

$f(x) = |x|$

$f(x) = \frac{1}{x}$

B. Transformations of Basic Functions

1. Vertical Shifts
2. Stretches
3. Shrinks
4. Reflections across axis
5. Rates of change, constant versus variable (speed)

C. Characteristics of Functions

1. Domain and Range
2. Zeros
3. Intervals of Increase and Decrease
4. Maximum/Minimum
5. End Behavior
6. Patterns (sequences)

II. Students will understand and use the language of mathematical argument and justification.

A. If then statements
B. Converse
C. Inverse
D. Contrapositive
E. Conjecture
F. Inductive reasoning
G. Deductive reasoning
H. Counter examples
I. Indirect proofs

Terminology:

Contrapositive: A conditional statement that negates and reverses the hypothesis and the conclusion.

Converse: A conditional statement that reverses the hypothesis and the conclusion.

Continuous: A set of data that can include any Real-numbered value in a given interval such temperature, time, and length.

Discrete: A set of data that represents a situation where the possibilities are distinct and separated from each other such as counts of people.

Domain: The set of all possible values for the independent or input variable in a function.

Hypothesis: In a conditional statement, the part that follows "if."

Inverse: A conditional statement that negates the hypothesis and the conclusion.

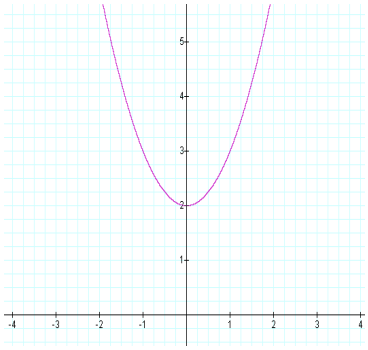
Range: The set of all possible values for the dependent or output variable in a function.

Math I Unit 1 Practice Test Name_____

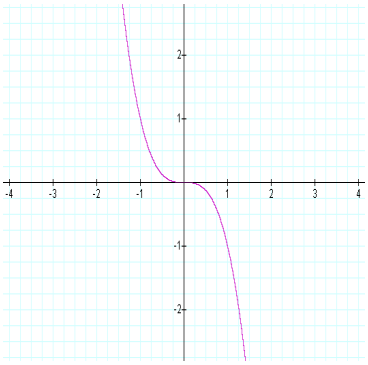
This paper is yours to keep.

Use these five graphs to answer questions 1 through 12 below.

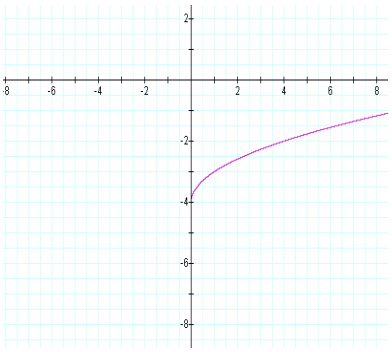
1.



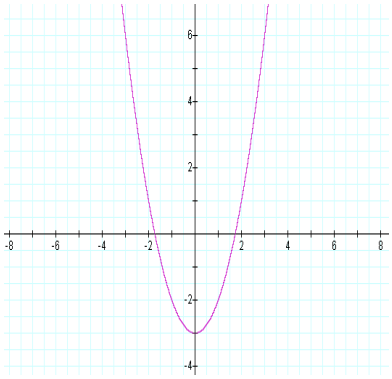
2.



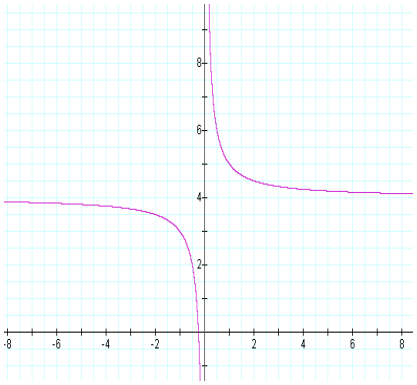
3.



4.



5.



Questions: write the best answer to each.

1. What is the domain of graph number 3?

A. $-\infty < x < \infty$ B. $-4 \le x < \infty$ C. $-\infty < x < -4$ D. $0 \le x < \infty$

2. What is the range of graph number 3?

A. $-\infty < y < \infty$ B. $-4 \le y < \infty$ C. $-\infty < y < -4$ D. $0 \le y < \infty$

3. What is the y-intercept of graph number 4?

A. -3 B. 3 C. 0 D. – 1.8, 1.8

4. Find the x-intercept(s) of graph number 5?

A. -0.25 B. 0.25 C. 0 D. none

5. What is the region of increase for graph number 1?

A. $-\infty < x < \infty$ B. $-\infty < x \le 0$ C. $-\infty < x < 3$ D. $0 \le x < \infty$

6. What is the region of decrease for graph number 4?

A. $-\infty < x < \infty$ B. $-\infty < x \le 0$ C. $-\infty < x \le -3$ D. $0 \le x < \infty$

7. Write the equation of graph number 5.

8. Write the equation of graph number 3.

Use the function $f(x) = |x|$ to answer questions 18 and 19.

9. What is the rate of change between points (-2,2) and (0,0)?

10. What is the average rate of change between points (-2,2) and (2,2)?

11a. and 11b. Write the explicit and recursive relationships describing the sequence below.
1 3 5 7 9

12. Is the following sequence arithmetic or geometric?
3 6 12 24 48

Answer questions 24-25 using this conditional statement: "If you study, then you are a loser." State what modification of the original conditional statement is given.

13. If you do not study, then you are not a loser. _____
14. If you are not a loser, then you do not study._____

Memory Jogger:

$y = x$ $\quad y = |x|$ $\quad y = x^2$ $\quad y = x^3$ $\quad y = \sqrt{x}$ $\quad y = \frac{1}{x}$

Answers

1. D
2. B
3. A
4. A
5. D
6. B
7. $y = \frac{1}{x} + 4$
8. $y = \sqrt{x} - 4$
9. ROC = -1
10. average ROC = 0

11a. $a_n = 1 + (N - 1)2$

11b. $a_n = a_{n-1} + 2$

12. Geometric
13. Inverse
14. Contrapositive

Unit 2 Outline

I. Students will simplify and operate with radical expressions (square roots), polynomials, and rational expressions.

   A. Numerical and Algebraic expressions

   B. Basic Operations

   C. Factoring

      1. Greatest common factor
      2. Grouping
      3. Trial and Error
      4. Special Products

   D. Binomial Theorem

   E. Area and Volume Models

II. Students will solve simple equations (including quadratics).

   A. Factoring
   B. Square Roots

Terminology:

Average rate of speed: Total distance divided by total time.

Area model: A rectangle whose dimensions represent factors and whose area represents the product of those factors.

Equivalent expressions: Algebraic expressions that represent the same quantity.

Monomial: An algebraic expression that is a constant, a variable, or a product of a constant and one or more variables. The exponent on any variable must be an integer. $2\boldsymbol{x}$, $3\boldsymbol{y}^2$, $\boldsymbol{a}$, 5

Polynomial: A monomial or the sum or difference of two or more monomials.

Polynomial arithmetic: Addition, subtraction, multiplication, and division of polynomials.

Radical expression: An expression that contains a square root or cube root.

Rational expression: An expression of the form $\boldsymbol{P}/\boldsymbol{Q}$ where $\boldsymbol{P}$ and $\boldsymbol{Q}$ are polynomials and $\boldsymbol{Q}$ does not equal 0.

Math I Unit 2 Practice Test

_____1. A skydiver survives a crash! He is air-lifted to the nearest hospital that is $100\sqrt{6}$ miles away. If the helicopter is traveling at $50\sqrt{3}$ miles per hour, how long will it take to get him there?

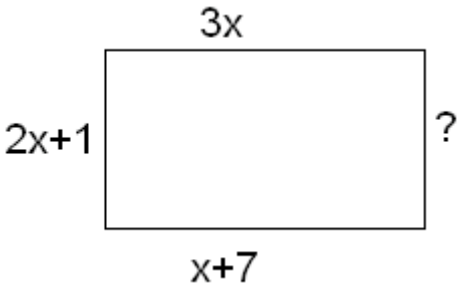
a) $2\sqrt{2}$ hours
b) $15000\sqrt{2}$ hours
c) $\frac{100\sqrt{6}}{50\sqrt{3}}$ hours
d) 1 hour

_____2. Simplify: $-\sqrt{147}+\sqrt{243}$

a) $2\sqrt{3}$
b) $\sqrt{390}$
c) $16\sqrt{3}$
d) $10\sqrt{39}$

_____3. The perimeter of the figure is 8x + 13. What is the length of the missing side?

a) 2x + 5
b) x – 8
c) 5x + 2
d) x + 6



_____4. Is the volume of a cube with sides (x + 2), (3x + 2), and (x – 7) equal to $3x^3 - 13x^2 - 52x - 29$?

a) Yes, because $(x + 2)(3x + 2)(x - 7) = 3x^3 - 13x^2 - 52x - 29$.
b) Yes, because $(x + 2) - (3x + 2) - (x - 7) = 3x^3 - 13x^2 - 52x - 29$.
c) No, because $(x + 2)(3x + 2)(x - 7) = 3x^3 - 13x^2 - 52x - 28$.
d) No, because $(x + 2) + (3x + 2) + (x - 7) = 5x - 3$.

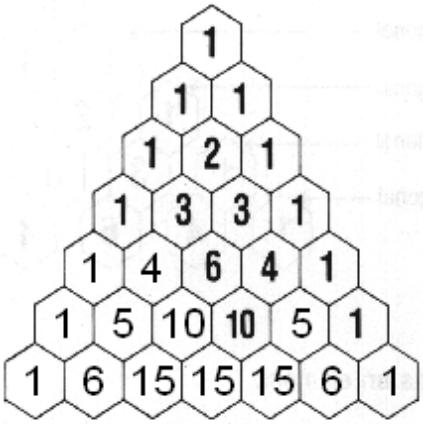
_____5. You start hiking and see a sign of a walking trail states it is 3x + 5 miles long. After walking it, you see a sign for another trail that is 2x + 1 miles long and also takes you back to where you started that day. How much longer was the first trail you took?

a) 5x + 6 miles, because 5x + 6 = 3x + 5 + 2x + 1.
b) x + 4 miles, because (3x + 5) – (2x + 1) = x + 4.
c) x + 6 miles, because 3x + 5 – 2x + 1 = x + 6.
d) $6x^2 + 13x + 5$, because $(3x + 5)(2x + 1) = 6x^2 + 13x + 5$.

_____6. Bruce is expanding $(x + 2)^3$. He comes up with $x^3 + 6x^2 + 6x + 8$. Did he make a mistake? If so, what is it?

a) He did not make a mistake.
b) He made a mistake because the coefficient on the third term should be 12.
c) He made a mistake because the coefficient on the second term should be 3.
d) He made a mistake because he should have only three terms instead of four.

_____7. Which row has an error in the following Pascal's Triangle?



a) n = 6, because you cannot have more than four odd numbers in a row.
b) n = 6, because 10 + 10 is 20, not 15.
c) n = 7, because there are three 15's in a row.
d) n = 7, because the second 15 should be less than 15.

Perform the indicated operation and simplify.

8. $\dfrac{x}{x^3+2x^2} \div \dfrac{x-2}{x}$

9. $\dfrac{5x}{x^2+5x-50} - \dfrac{x+7}{x+10}$

10. $\dfrac{x^2-9}{x^2+2x-15}$

Solve for x.

11. $x^2 - 14x + 47 = -2$

Answers:
1. a
2. a
3. a
4.. c
5. b
6. b
7. c

8. $1/(x^2 - 4)$

9. $\dfrac{-x^2+3x+35}{(x+10)(x-5)}$

10. $\dfrac{x+3}{x+5}$

11. 7

Unit 3 Outline

Students will discover, prove, and apply properties of triangles, quadrilaterals and other polygons (geometric shapes).

I. Triangles

   A. Points of concurrency

   B. Theorems/Postulates
      1. Triangle Inequality
      2. Side-angle Inequality
      3. Exterior-angle inequality
      4. Congruence Postulates and Theorems

   C. Sums of Interior and Exterior Angles

II. Quadrilaterals and Other Polygons

   A. Sums of Interior and Exterior Angles

   B. Properties of Special Quadrilaterals

Terminology:

Centroid: The point of concurrency of the medians of a triangle.

Circumcenter: The point of concurrency of the perpendicular bisectors of the sides of a triangle.

Incenter: The point of concurrency of the bisectors of the angles of a triangle.

Orthocenter: The point of concurrency of the altitudes of a triangle.

Exterior angle of a polygon: An angle that forms a linear pair with one of the angles of a polygon.

Remote interior angles: The two angles that are non-adjacent to the exterior angle.

Exterior Angle Inequality: An exterior angle is greater that either of the remote interior angles.

Postulate: An assumption presumed to be true. Also called an axiom.

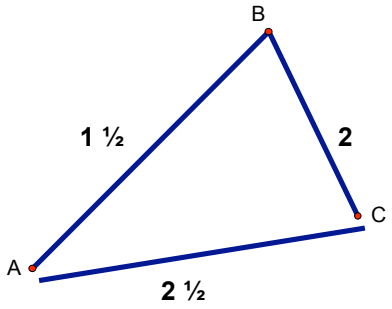
Theorem: A fact formerly derived from postulates and definitions.

Trapezoid: A quadrilateral with two parallel sides. (Some authorities say "exactly" while others say "at least" two parallel sides.)

Kite: A quadrilateral with two pairs of congruent adjacent sides.

Math I Unit 3 Practice Test

1. List the angles in order of size, beginning with the smallest.



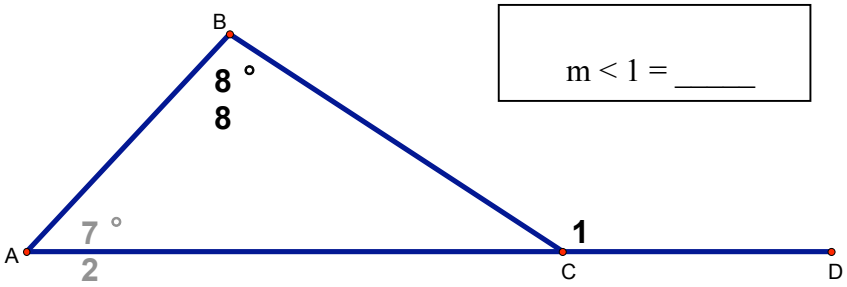
_____, < _____, < _____

2. In the diagram above, at which angle is the exterior angle the largest?

3. Is it possible to draw a triangle with the following side lengths? Explain.

18 in., 21 in., and 1 ½ ft.

4. Find the measure of < 1 in the figure below.



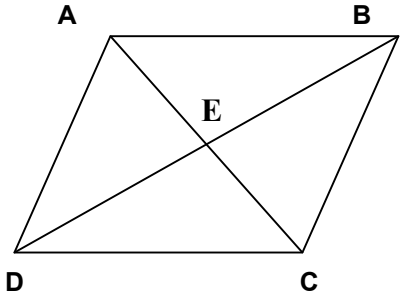
m < 1 = _____

5. Find the sum of the interior angles of a 93 – gon.

6. Find the sum of the exterior angles of a regular pentadecagon.

7. How many sides does a regular polygon have if each of its exterior angles is 2°?

8. Given: Quadrilateral ABCD is a rhombus.



a. m < ADB = 27, find m < ADC _____.

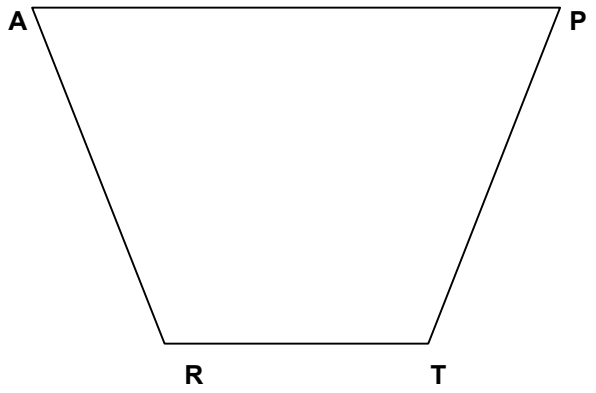
b. DE = 13, find DB. _____

c. AD = 4x – 3, AB = 18 + x, find CD _____.

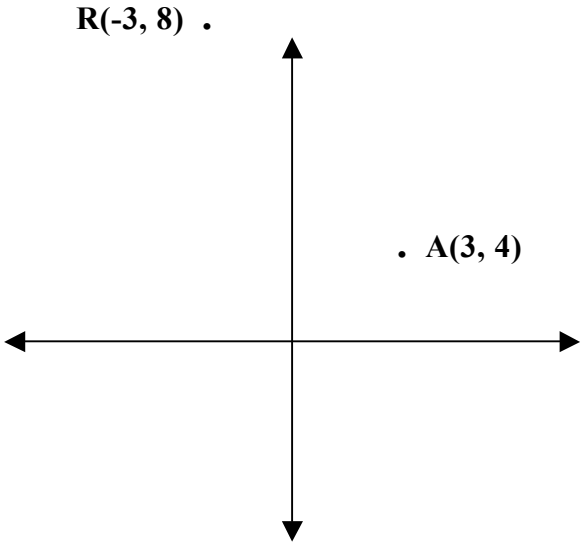
9. Quadrilateral TRAP is an isosceles trapezoid.

a. RA = 6x – 3, AP = 4x + 7, and TP = 2x + 5, find AP _____

b. m < P = 77, find m < A _____ and m < T _____



Use the diagram below to answer questions 10 – 12.



10. Find the midpoint of each side if these were connected to make a triangle

11. Find the perimeter of the triangle

(round to the nearest tenth).

Unit 3 Practice Test Key:

1. $\angle C < \angle B < \angle A$
2. $\angle C$
3. Yes, because the sum of the two smallest sides is greater than the longest side. (Triangle Inequality)
4. $160°$
5. $(91 \times 180) = 16380°$
6. $360°$
7. 180 sides
8. a. $54°$
   b. 26
   c. 25
9. a. 15
   b. $\angle A = 77°, \angle T = 103°$
10. $RA = (6,0), AT = (-2,-1), TR = (-5,1)$
11. 35.9

Unit 4 Outline

I. Students will determine the number of outcomes related to a given event.

   A. Addition & Multiplication Principles of Counting
   B. Simple Permutations & Combinations.

II. Students will use the basic laws of probabilities.

   A. Mutually Exclusive Events
   B. Dependent Events
   C. Conditional Probabilities
   D. Expected Values

III. Students will relate samples to a population

   A. Summary Samples
   B. Random Samples

IV. Students will explore variability of data by determining the mean absolute deviation (the average of the absolute values of the deviations).

Terminology:

Combination: A collection of objects in which the order of objects does not matter.

Conditional probability: The chance that a second event will occur given that another event has occurred.

Dependent events: Two events in which the outcome of one affects the probability of the other.

Expected value: A predicted value for a distribution based on the probability and value of the events in the distribution.

Factorial: The product of all the integers from 1 up to the integer in question.
$5! = 1 \cdot 2 \cdot 3 \cdot 4 \cdot 5 = 120$

Mean absolute deviation: Average of the absolute values of the deviations.

Mutually exclusive events: Two events that have no outcomes in common.

Outcome: A possible result.

Parameter: A numerical value that describes the population.

Permutation: Each different arrangement of a set of objects.

Summary statistics: Measures of the center (mean, median) and of the spread (quartiles, interquartile range)of a set of data.

Variability: A measure of the spread or dispersion of a data distribution.

Math I Unit 4 Practice Test

From a standard deck of 52 cards, you draw the 7 of diamonds. Determine each probability.

1. What is the probability of drawing the 7 of diamonds next if you don't return the card? If you do return the card?

Your math teacher, Mr. Johnson, is in charge of the school math club. Suppose that there are 20 students in the math club. Use this information to answer each question.

2. If Mr. Johnson chooses three students at random to serve as club officers, what are the chances he selects Josh as president, Jen as secretary, and Josie as treasurer?

Use the given information to determine each probability.

3. Mr. Abdullah informs his class that 75 percent of them have received a score of 80 or above on both the first test and the second test. Then he informs them that 80 percent of the students in the class scored an 80 or above on the first test. What is the probability that a student who scored an 80 or above on the first test also scored an 80 or above on the second test?

A game at a fair involves a deck with 10 cards, the 2 through 6 of spades and the 2 through 6 of hearts. To play the game, a player pulls a single card out of the deck and is paid depending on the card. For the various payouts described, calculate the expected value of playing this game.

4. $0 for a spade; $1 for an even heart, $2 for the 3 of hearts, and $3 for the 5 of hearts

A game at a fair involves tossing a colored cube. The cube has two red sides, two green sides, one yellow side, and one blue side. For the various payouts described, calculate the expected value of playing this game.

5. $10 for yellow, $4 for green, $0 for the others

Describe how you would expect the experimental probabilities to compare for each set of experiments.

6. A standard deck of cards is used to conduct three experiments to find the experimental probability of drawing a card that is a spade. In the first experiment, a card is drawn and replaced 20 times. In the second experiment, a card is drawn and replaced 200 times. In the third experiment, a card is drawn and replaced 2000 times.

Each stem-and-leaf plot has been rotated 90 degrees in a counterclockwise direction so that the leaves go up instead of to the right. Determine whether each data set is skewed left, skewed right, or symmetric.

7. Key: 1|2 = 12

8				7
4		6		5
3	8	3	7	4
1	4	3	5	2
0	1	2	3	4

Answer each question about samples.

8. What is the advantage of using a random sample?

Given the data set and criterion for selecting a random sample, determine the mean and median of each sample. Round your answer to the nearest tenth, if necessary.

9. A principal wants to take a random sample of students' GPAs. Each GPA is assigned a random number. Calculate the mean and median of the sample of GPAs that has the assigned random numbers that are between (and including) 1 and 10.

Random Number	GPA	Random Number	GPA	Random Number	GPA
7	2.0	21	3.1	24	1.1
4	2.2	8	3.8	20	1.2
23	2.7	26	4.0	25	3.0
10	1.9	19	3.4	15	3.0
18	2.6	17	3.5	3	3.5
27	3.5	28	3.5	22	2.6
39	3.9	2	3.1	14	4.0
30	2.8	16	3.5	9	2.1
12	2.3	13	3.5	6	2.3
5	2.7	1	4.0	11	3.8

Calculate the mean of the sample described. Round your answer to the nearest tenth, if necessary.

10. Use the fourth column as your sample.

69	153	193	34	63
44	191	32	137	45
52	93	131	166	57
180	166	188	41	86
189	171	139	21	184
157	10	23	194	192
62	4	98	90	158

Answer Section

1. ANS:
   0, $\frac{1}{52}$

2. ANS:
   $\frac{1}{20} \cdot \frac{1}{19} \cdot \frac{1}{18} = \frac{1}{6840}$

3. ANS:
   Let A = a score of 80 or above on the first test, and B = a score of 80 or above on the second test.

   $P(A \cap B) = \frac{3}{4}$, $P(A) = \frac{4}{5}$

   $$P(B|A) = \frac{P(A \cap B)}{P(A)} = \frac{\frac{3}{4}}{\frac{4}{5}} = \frac{15}{16}$$

   There is a 93.75 percent probability that a student who scored an 80 or above on the first test also scored an 80 or above on the second test.

4. ANS:
   The probability of drawing a spade is $\frac{1}{2}$. The probability of drawing an even heart is $\frac{3}{10}$,and the probability of the 3 or 5 of hearts is $\frac{1}{10}$. So, the expected value is

   $\frac{1}{2} \cdot \$0 + \frac{3}{10} \cdot \$1 + \frac{1}{10} \cdot \$2 + \frac{1}{10} \cdot \$3 = \$0.80.$

5. ANS:
   The probability of throwing red or green is $\frac{2}{6} = \frac{1}{3}$, while the probability of throwing yellow or blue is $\frac{1}{6}$. So, the expected value is $\frac{1}{3} \cdot \$4 + \frac{1}{3} \cdot \$0 + \frac{1}{6} \cdot \$10 + \frac{1}{6} \cdot \$0 = \$3.$

6. ANS:
   The experimental probabilities will get closer to the theoretical probability of $\frac{1}{4}$ as the number of trials increases.

7. ANS:
   The data set has a symmetric distribution.

8. ANS:
Because each value in the population data set is equally likely to be picked, you are more likely to end up with a sample that is representative of the whole population.

9. ANS:
The sample consists of these values:

4.0, 3.1, 3.5, 2.2, 2.7, 2.3, 2.0, 3.8, 2.1, 1.9

Mean: $(4.0 + 3.1 + 3.5 + 2.2 + 2.7 + 2.3 + 2.0 + 3.8 + 2.1 + 1.9) \div 10 = 27.6 \div 10 \approx 2.8$

The mean GPA is 2.8.

Sample in numerical order: 1.9, 2.0, 2.1, 2.2, 2.3, 2.7, 3.1, 3.5, 3.8, 4.0

Median: $(2.3 + 2.7) \div 2 = 5 \div 2 = 2.5$

The median GPA is 2.5.

10. ANS:
Sample: 34, 137, 166, 41, 21, 194, 90

Mean: $(34 + 137 + 166 + 41 + 21 + 194 + 90) \div 7 = 683 \div 7 \approx 97.6$

The mean of the sample is 97.6.

Unit 5 Outline

I. Students will explore and interpret the characteristics of functions, using graphs, tables, and simple algebraic techniques.

   A. Transformations
   B. Characteristics
   C. Symmetry
   D. Equivalency

II. Students will solve simple equations

   A. Radicals
   B. Quadratics
   C. Rationals

III. Students will simplify and operate with radical expressions, polynomials, and rational expressions.

   A. Basic Operations
   B. Factoring

Terminology:

End behavior: A description of how a graph appears as its independent variable gets very large and very small.

Even function: A function that produces the same output for a given input and the opposite of that input. $f(-x) = f(x)$.
Example: $f(x) = x^2$

Extraneous solution: A solution of a simplified version of an equation that does not satisfy the original equation.

Factor: To determine two or more expressions whose product is equivalent to a given expression.

Leading coefficient: In a polynomial, the number multiplied by the variable term with the highest degree.

Odd function: A function that produces the opposite output for the opposite input.
$f(-x) = -f(x)$.
Example: $f(x) = x^3$

Quadratic expression: A polynomial whose highest degree is 2.
Example: $x^2 + 3x - 5$

Transformations: Operations that alter the form of a geometric figure. Transformations in Math I include translations (shifts), dilations (stretches and shrinks), rotations (turns), and reflections (flips).

Zero factor property: When the product of two or more factors is 0, one of the factors = 0.

Zero of a function: A value for x that makes $f(x)$ equal to 0.

Math I Unit 5 Practice Test

Multiple Choice

Choose the correct answer.

1) For the function, $f(x) = x^4 - 5$, what is $f(-2)$?

a. – 21 **b.** 3 **c.** 11 **d.** – 13

2) The table of values shows four ordered pairs for a function. Which equation also represents the function?

a. $f(x) = 3x$
b. $f(x) = x - 1$
c. $f(x) = -3x$
d. $f(x) = 2x - 1$

x	$f(x)$
0	–1
2	3
4	7
6	11

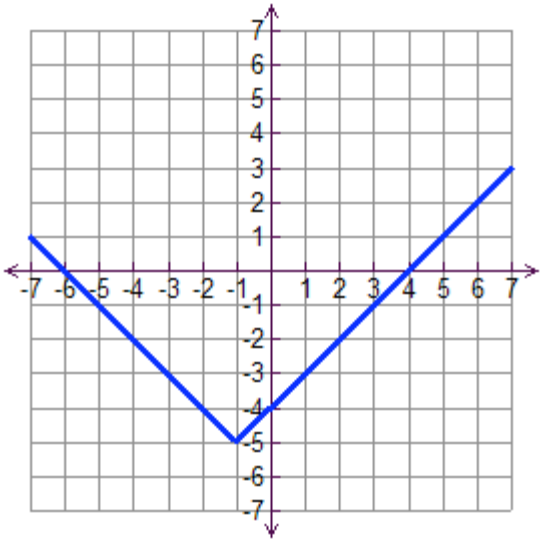
3) This table shows all five ordered pairs in a function. What is the range of this function?

a. {1, 4, 6, 5, 2}
b. {– 3, – 1, 0, 2, 3, 1, 4, 6, 5, 2}
c. {– 3, – 1, 0, 2, 3}
d. The set of all real numbers greater than or equal to – 3 and less than or equal to 6.

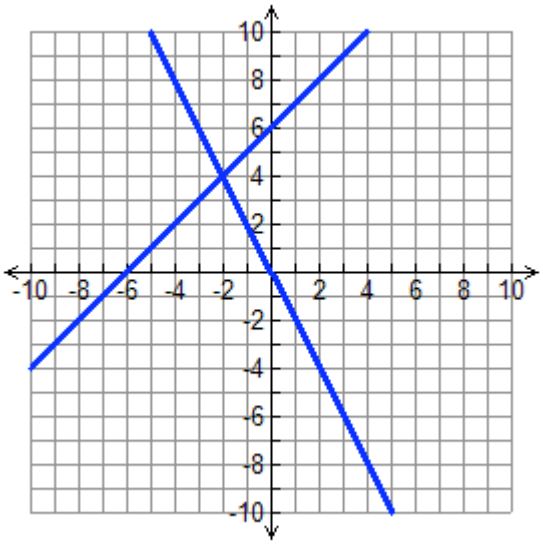
x	$f(x)$
– 3	1
– 1	4
0	6
2	5
3	2

4) Below is a graph of $f(x) = |x + 1| - 5$. Which statement is **NOT** true of the function?

a. This functions has two x-intercepts.
b. This function has two y-intercepts.
c. The point at (– 6, 0) is an x-intercept.
d. The point at (0, – 4) is a y-intercept.

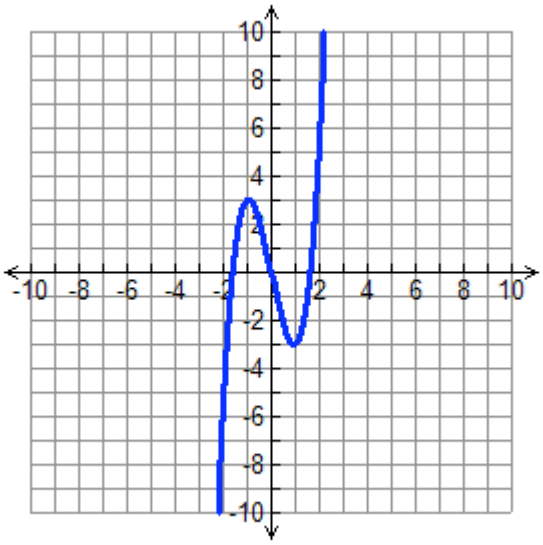


5). To solve $-2x = x + 6$, Andrew graphed the functions $f(x) = -2x$ and $g(x) = x + 6$ on the coordinate grid below. What is the value of x?



a. 4
b. 2
c. – 1
d. – 2

6. Below is the graph of $y = 2x^3 - 5x$. Which describes the symmetry of the graph?

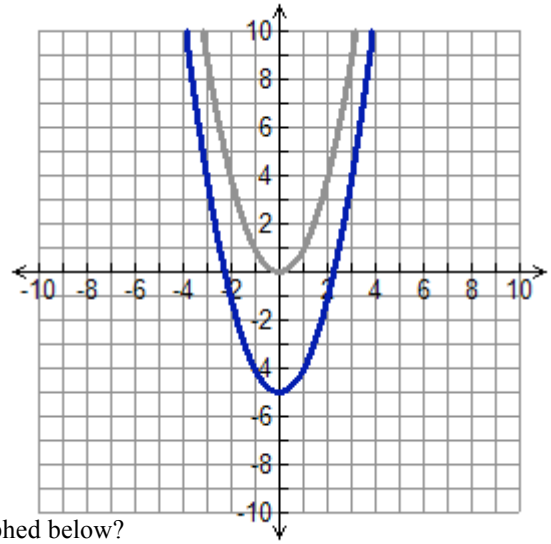


a. symmetric with respect to the y-axis
b. symmetric with respect to the x-axis
c. not symmetric with respect to any axis or to the origin
d. symmetric with respect to the origin

7) Which is true of the function $f(x) = 3x^2 + 1$?

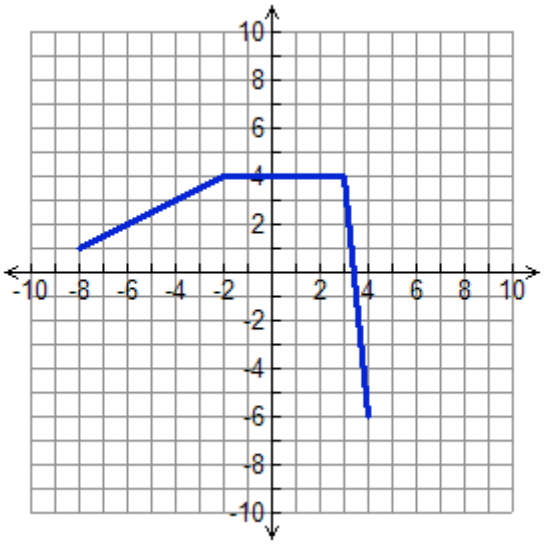
a. It is an even function.
b. It is an odd function.
c. It is neither even nor odd.
d. It is symmetric with respect to the x-axis.

8) Which describes how the graph of $f(x) = x^2$ could be transformed to form the graph of $h(x) = x^2 - 5$?



a. vertical shift of 5 units down
b. vertical shift of 5 units up
c. reflection over the x-axis
d. reflection over the y-axis

9) Which statement is **NOT** true about the function graphed below?



a. Its x-intercept is 4
b. Its minimum value is – 6
c. It is decreasing on the interval [3, 4]
d. Its domain is all real numbers from [–8, 4]

10) To solve $-x^2 + 64 = 0$, Alicia made this table. Which shows the solutions for this quadratic equation?

x	***y***
– 8	0
– 6	28
– 4	48
– 2	60
0	64
2	60
4	48
6	28
8	0

a. $x = -2$ and $x = 2$

b. $x = 0$ and $x = -2$

c. $x = -8$ and $x = 8$

d. $x = -8$ and $x = 0$

11) Which value of x is a solution for $\sqrt{3x+1} = 4$?

a. $x = 1$

b. $x = \frac{5}{3}$

c. $x = 5$

d. $x = 3$

12) Which shows the solution of $(x-8)^2 = 3$?

a. $x = \pm\sqrt{5}$

b. $x = \pm\sqrt{11}$

c. $x = -8 \pm \sqrt{3}$

d. $x = 8 \pm \sqrt{3}$

13) Solve the equation below for n.

$$\frac{8}{x+1} + \frac{15}{x-2} = \frac{160}{(x+1)(x-2)}$$

a. $x = 6$

b. $x = 7$

c. $x = 8$

d. $x = 9$

Key: 1. C 2. D 3. A 4. B 5. D 6. D 7. A 8. A 9. A 10. C 11. C 12. D 13. B

Unit 6 Outline

Students will investigate properties of geometric figures in the coordinate plane.

I. Distance Formula

   A. Distance Between Points
   B. Distance between a Point and a Line

II. Midpoint Formula

III. Quadratics and Trapezoids

Terminology:

Concave polygon: A polygon with one or more diagonals that have points outside the polygon.

Convex polygon: A polygon with all interior angles measuring less than 180° . All diagonals of a convex polygon are inside the polygon.

Distance formula: The equation to find the length between two points on the coordinate plane.

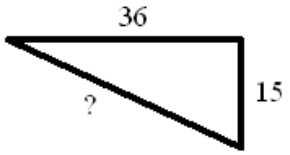
Midpoint: The point on a line segment that divides it into two equal parts.

Non-collinear: Not on the same line

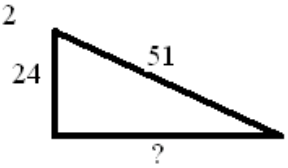
Unit 6 Practice Test

Find the missing side of each right triangle.

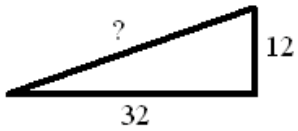
1



2



3



The lengths of all three sides of a triangle are given. Is the triangle a right triangle?
4. 9, 40, 41

Fill in the blank.
5. A(An) _____ is a parallelogram with a right angle.

6. A(An) _____ is a parallelogram with consecutive sides congruent.

7. A(An) _____ is a rhombus and rectangle.

8. A(An) _____ is a quadrilateral with exactly 1 pair of parallel sides.

9. A(An) _____ is a quadrilateral with two pairs of consecutive congruent sides.

Use for numbers 10 – 18 :
10. Plot points A(-4, -2), B(-1, 5), C(10, 5) and D(7, -2)

11. Are AB and CD parallel? How do you know?

12. Are AD and BC parallel? How do you know?

13. What do the answers to numbers 21 and 24 prove about quadrilateral ABCD?

14. Are AD and AB perpendicular?

15. Is ABCD a rectangle? Why or why not?

16. What is the length of side AB?

17. What is the length of side BC?

18. Is ABCD a rhombus? Why or why not?

1	39
2	45
3	34.18
4	yes
5	rectangle
6	rhombus
7	square
8	trapezoid
9	kite
10	Graph
11	yes, same slope
12	yes, same slope
13	It is a parallelogram
14	no
15	no, no right angle
16	$\boxed{\sqrt{58} \approx 7.62}$
17	11
18	no, consecutive sides are not congruent

Resources

Carnegie Learning Textbooks
www.carnegielearning.com

Georgia Department of Education
https://www.georgiastandards.org/Pages/default.aspx

Mathematics Teachers of Hall County
For information please contact, melissa.stewart@hallco.org

U. S. Department of Education

http://www.ed.gov/parents/academic/help/math/index.html