

## Algebra B DSPA – General Guidelines

The district assessments in this booklet will be given following these guidelines:

Calculators can be used on all DSPA's.

- MA-AB-01** **Graphing Linear Equations and Systems of Equations** – To be given after completion of Unit 7.
- MA-AB-02** **Multiplying Binomials, Factoring, and Solving Quadratic Equations** – To be given after completion of Unit 8.
- MA-AB-03** **Pythagorean Theorem and Equation of Lines** – To be given after completion of 9.
- MA-AB-04** **Exponential Expressions and Quadratic Formulas** – To be given after completion of 10.
- MA-AB-05** **Data Analysis and Probability**– To be given sometime during second semester. The teacher may need to do a review of measures of central tendency and probability before giving the assessment.

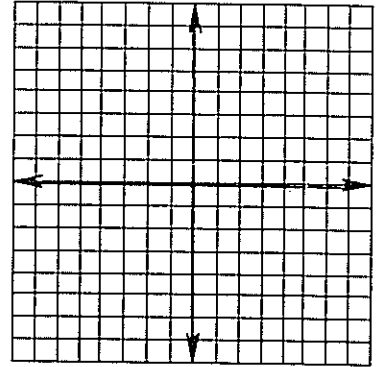
Enter the percent score for each student in Power Grade after each assessment.

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

Algebra B DSPA – MA-AB-01

1. (15 pts.) Use the graph at right to answer the following questions.

- a) Plot the points (4, 1) and (6, 2). Find the slope of the line containing these two points. Slope = \_\_\_\_\_
- b) Find another point on the line containing those two points. Write the coordinates of the point you found. Coordinates (ordered pair) are \_\_\_\_\_
- c) Write the equation of the line containing these points. Explain how you knew this answer.



2. (20 pts.) Find the slope and the y-intercept of each of the following lines.

a)  $y = \frac{2}{3}x - 3$

b)  $4x + 2y = 10$

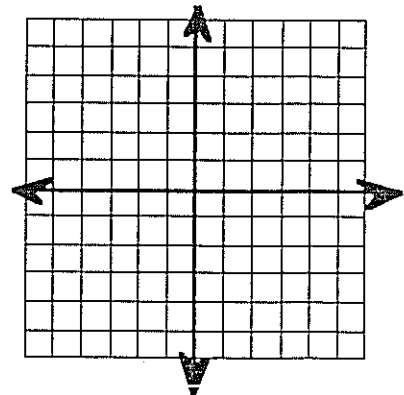
Slope is \_\_\_\_\_  
y-intercept is \_\_\_\_\_

Slope is \_\_\_\_\_  
y-intercept is \_\_\_\_\_

3. (20 pts.) On the graph at right, graph and label each of the following equations.

a)  $y = -2x + 4$

b)  $y = \frac{1}{2}x - 1$



4. 20 pts. Solve each of the following equations for x and y. (Solve the systems by using substitution and show your work.) Make sure you give the answer for x and y in each equation.

$$\begin{aligned}y &= 2x + 1 \\ 3x + y &= 11\end{aligned}$$

$$\begin{aligned}x &= 2y - 1 \\ 2x + 3y &= 12\end{aligned}$$

Show your work as you check your answers in the above problems.

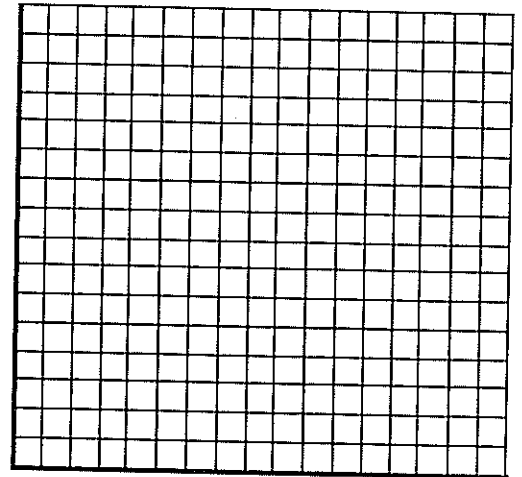
5. 25 pts.

You can rent a bike at two different shops:

Bike Shop: 5 dollars plus \$2 per hour ( $y = 2x + 5$ )

Ride4Fun: 3 dollars plus \$3 per hour ( $y = 3x + 3$ )

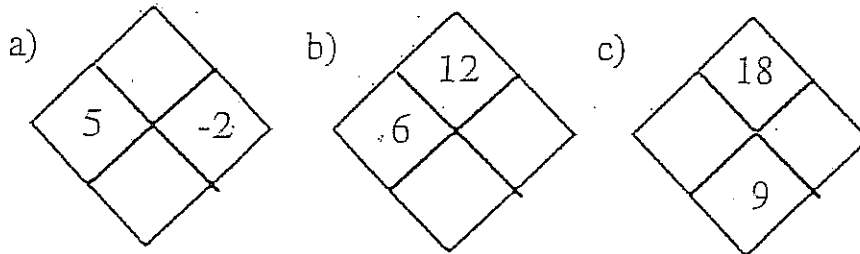
- Label the x-axis: Number of Hours rented
- Label the y-axis: Cost of renting bike
- Graph each equation on the graph to the right
- What is the point of intersection? \_\_\_\_\_
- Explain what this point of intersection represents.



**Algebra B DSPA - MA-AB-02 Multiplying Binomials, Factoring & Solving Quadratic Equations**

1. (15 pts.) Solve these diamond problems.

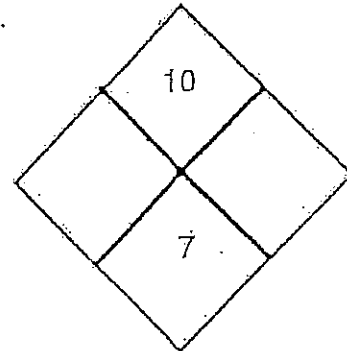
Product



Sum

2. (15 pts.) Solve the diamond problem to the right.

Now factor  $x^2 + 7x + 10$



Explain the relationship between the diamond problem and the factoring problem.

3. (40 pts.) One of these problems has a common factor...circle the problem that does. One is a difference of squares...put a square around it. Now **FACTOR** all 6 problems. Use diamond problems to help if you wish.

a)  $x^2 + 7x + 12$

b)  $y^2 - 5y + 6$

c)  $5x + 15$

d)  $y^2 + 8y + 12$

e)  $x^2 - 16$

f)  $x^2 + 6x + 9$

Algebra B - MA-AB-02 (page 2)

4. (15 pts.) Multiply the following expressions. It may be helpful to draw generic rectangles.

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

c)  $6(x + 3)$

b)  $(2x + 1)(3x + 2)$

5. (15 pts.) Solve each of the following equations. Part A is done as an example for you. (You should get 2 answers for each problem.)

a)  $x^2 + 9x + 20 = 0$

c)  $x^2 + 3x - 10 = 0$

$(x + 4)(x + 5) = 0$

$x + 4 = 0$     $x + 5 = 0$

$x = -4$     $x = -5$

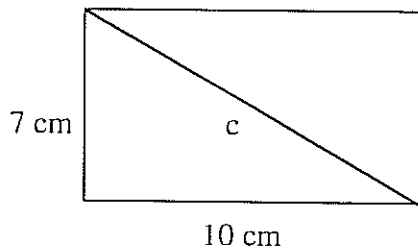
b)  $x^2 + 6x + 8 = 0$

d)  $x^2 - 25 = 0$

Algebra B DSPA – MA-AB-03

••It may be helpful to have some graph paper to use on this test.••

1. (15 pts.) A rectangular piece of paper is seven centimeters wide and ten centimeters long. How long is the diagonal? See the diagram and use the Pythagorean Theorem to find the length of the diagonal. (Round to the nearest tenth.)

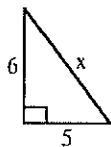


2. (20 pts.) For the following problem, define a variable, draw and label a diagram, then write an equation and solve it.

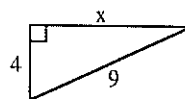
When Palmer bought a new kite with 100 feet of string, he phoned his friend Teller to meet him at the park to fly it. They let the kite soar away from them until all 100 feet of string was extended. At that point, Teller walked away from Palmer toward the kite, measuring the distance to a point directly under the kite. Once he was directly under the kite, he found he was 80 feet from Palmer. How high was the kite?

3. (20 pts.) Solve each triangle for the unknown side(s). Round each answer to the nearest tenth. Show an equation for each problem.

a)



b)



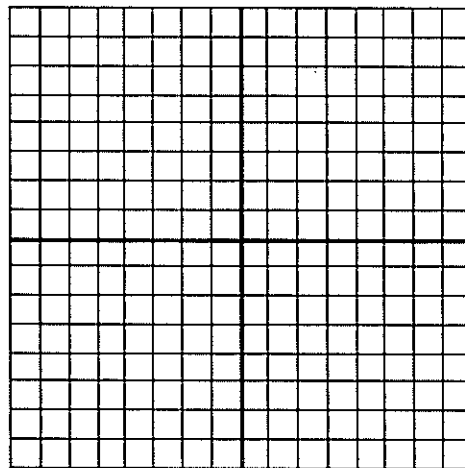
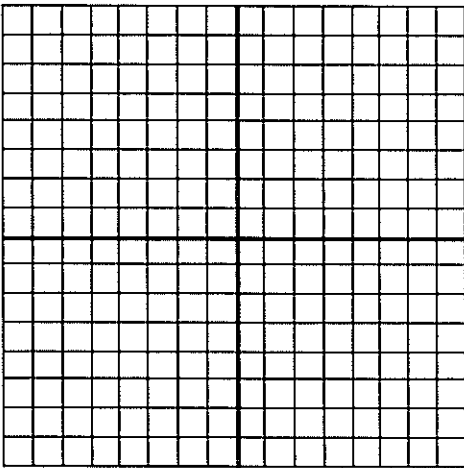
4. (10 pts.) Find the distance between each pair of points. Use graph paper to help you solve these problems. On part b, use the Pythagorean Theorem.

a)  $(-3, 4)$  and  $(2, 4)$       Distance \_\_\_\_\_

b)  $(2, 3)$  and  $(-1, 7)$       Distance \_\_\_\_\_

5. (20 pts.) On the graph below, plot the point  $(2, -5)$  and label it A. Slide A six units up and three units left. Label this new point B.

- a) Write the coordinates (ordered pair) of B, and draw a line through the two points.
- b) Can you tell if the slope of this line is positive or negative by looking at the graph? Explain.
- c) What is the **slope** of this line?



6. (15 pts.) Use the above graph on the this problem if you wish.

- a) Find the **slope** of the line passing through the points  $(4, 2)$  and  $(6, 6)$ .
- b) Find the **y-intercept** of the line passing through these same two points:  $(4, 2)$  and  $(6, 6)$ .
- c) Find the **equation** of the line passing through these same two points:  $(4, 2)$  and  $(6, 6)$

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

**Algebra B DSPA - MA-AB-04 Exponential Expressions & Quadratic Formulas**

1. (20 pts.) Write the quadratic formula and then explain what it is used for.

2. (20 pts.) Solve  $x^2 + 6x + 8 = 0$  by factoring and using zero products.

Now solve the same equation,  $x^2 + 6x + 8 = 0$  , using the quadratic formula.

How do your answers compare? Explain.

3. (20 pts.) Solve  $x^2 + 5x + 3 = 0$  using the quadratic formula. You can have a square root sign in your answer. Explain why using the quadratic formula is the best method for solving this problem.



Algebra B - MA-AB-04 (page 2)

4. (40 pts.) Use what you know about exponents to simplify each of the following expressions.

$$x^3 \cdot x^4$$

$$(y^3)^4$$

$$\frac{x^6}{x^2}$$

$$8^0$$

$$32^1$$

$$m \cdot m^3 \cdot m^7$$

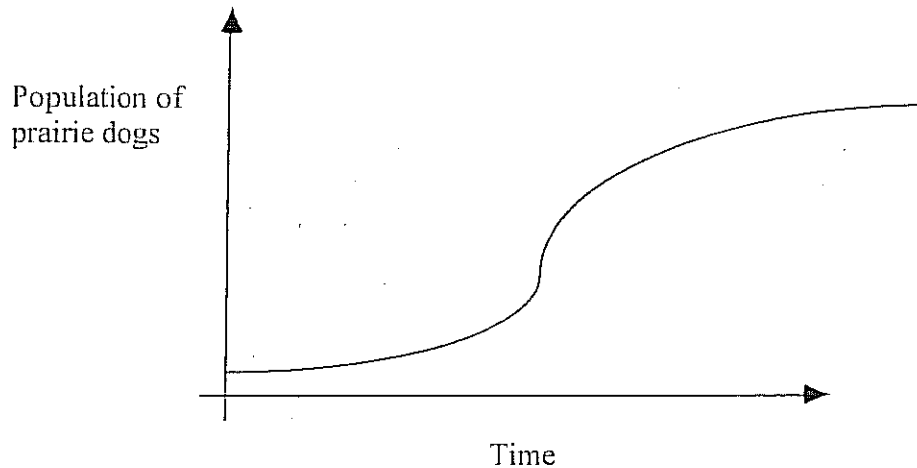
$$\frac{10^7}{10^3}$$

$$(4x^5)^2$$

**Algebra B DSPA - MA-AB-05 Data Analysis & Probability**

1. (20 pts.) A bag of candy contains 7 blue candies, 3 green candies and 5 yellow candies. If one candy is drawn out at random, what is the probability that it is:
- a) green?
  - b) yellow?
  - c) either blue or green?
  - d) A boy reached in the bag, grabbed a candy, and replaced it. He did this 20 times. The boy said that he grabbed a blue candy one time, and a green candy 19 times. Do you think this is likely? Explain.

2. (20 pts.) Examine the graph below closely.



**Explain completely** what the graph tells you. Give a reasonable explanation for its shape.

3. (20 pts.) Find the mean, median, mode and range for the following ages of students in a college class:

18, 24, 20, 18, 20, 32, 20, 44, 21

mean:

median:

mode:

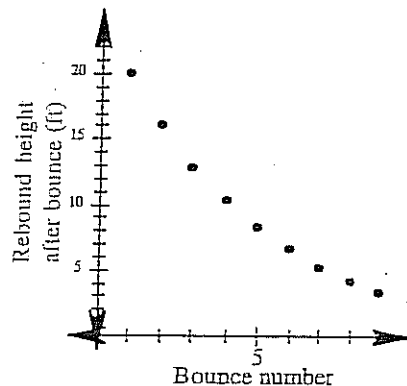
range:

Algebra B - MA-AB-05 (page 2)

4. (20 pts.) If you roll one six-sided die,
- a) What is the probability that the number you roll will be a factor of 20? (This means the number can divide into 20 evenly). Justify your answer.
  
  
  
  
  
  
  
  
  
  
  - b) What is the probability that the number you roll will be even? Justify your answer.

5. (20 pts.) In an experiment, a ball is dropped and allowed to keep bouncing. The graph at right shows the data collected.

- a) How high did the ball bounce back up on the first bounce? (Label your answer).
  
  
  
  
  
  
  
  
  
  
- b) On which bounce did the ball appear to rebound to a height of about 8 feet?



- c) Should there be a point on the x-axis eventually? Explain your reasoning.
  
  
  
  
  
  
  
  
  
  
- d) What is your best estimate on how high the ball was dropped from originally? Why do you think this is a good guess?