

## Crimson Summer Enrichment Math Pre-Assessment Directions

We are so glad you are going to be part of the Crimson Summer Enrichment program. Since we only have 10 days, we want to make sure that you are getting help in the areas that are most important to your success next year at Manual. In order to know what math skills we should address, you will need to complete two parts of this assessment. All of your work should be your own. For the first part of the assessment do not use any kind of calculator. For the second part of the assessment, you may use a calculator. It is okay if you're not sure if your answers are right. Just do your best. Please complete this assessment and return it to Manual by \_\_\_\_\_.

1. Both incoming freshmen and sophomores should complete PART 1 of the pre-assessment. Print this document and complete it to the best of your ability. Show any work that you do on the paper. Do not use a calculator.
2. Incoming freshman should do PART 2A of the assessment and incoming sophomores should do PART 2B of the assessment. Print the part you need and complete it to the best of your ability. Show any work that you do on the paper.
3. When you are finished with both PART 1 and PART 2, you can get it to Manual High School in one of three ways.
  - Bring your test to the main office. The office is open from \_\_\_\_\_ to \_\_\_\_\_. Ask whoever is at the front desk to put your test in Bev Meng's mailbox.
  - Mail your test to the front office. Send it to the following address

DuPont Manual High School  
c/o Bev Meng  
120 West Lee Street  
Louisville KY 40208

- Scan your test and email it to [kris.tatro@jefferson.kyschools.us](mailto:kris.tatro@jefferson.kyschools.us). In the subject line put Crimson Pre-Assessment for "your name"

Name \_\_\_\_\_ Grade you will be in next school year \_\_\_\_\_

**Crimson Summer Enrichment Math Assessment Part 1**  
(Non Calculator Section)

**Integer Operations:** Determine the correct answer for each question Show your work and write your answer in the space provided. Write your answer in simplified form.

1.  $-3 + 10 =$  \_\_\_\_\_

2.  $-9 + -5 =$  \_\_\_\_\_

3.  $-7 - -2 =$  \_\_\_\_\_

4.  $-3 - 8 =$  \_\_\_\_\_

5.  $-3 \cdot -7 =$  \_\_\_\_\_

6.  $12 \div -2 =$  \_\_\_\_\_

**Multiplying by Powers of 10:** Determine the correct answer for each question and write it in the space provided.

7.  $14 \times 10 =$  \_\_\_\_\_

8.  $150 \times 10 =$  \_\_\_\_\_

9.  $2.57 \times 10 =$  \_\_\_\_\_

10.  $25 \times 100 =$  \_\_\_\_\_

11.  $2.15 \times 100 =$  \_\_\_\_\_

12.  $2.157 \times 100 =$  \_\_\_\_\_

13.  $10 \times$  \_\_\_\_\_  $= 31.5$

14.  $100 \times$  \_\_\_\_\_  $= 7000$

**Fractional Values:** Determine the correct answer for each question and write it in the space provided.

15. Find equivalent fractions

$$\frac{5}{3} = \frac{\square}{24}$$

$$\frac{3}{5} = \frac{\square}{30}$$

$$\frac{3}{5} = \frac{\square}{20}$$

16. Change improper fractions to mixed numbers or change mixed numbers into improper fractions.

$$\frac{7}{3} =$$
 \_\_\_\_\_

$$\frac{7}{2} =$$
 \_\_\_\_\_

$$3\frac{1}{2} =$$
 \_\_\_\_\_

$$4\frac{2}{5} =$$
 \_\_\_\_\_

17. Put  $<$ ,  $>$  or  $=$  between pairs of fractions.

$$\frac{1}{8} \quad \frac{1}{6}$$

$$\frac{11}{20} \quad \frac{1}{2}$$

$$\frac{3}{4} \quad \frac{3}{20}$$

$$\frac{5}{8} \quad \frac{10}{16}$$

**Fraction Operations:** Determine the correct answer for each question and write it in the space provided. Write your answer in simplified form.

$$18. \frac{3}{5} + \frac{4}{5} = \underline{\hspace{2cm}}$$

$$19. \frac{7}{10} - \frac{3}{4} = \underline{\hspace{2cm}}$$

$$20. \frac{3}{5} + \frac{1}{4} = \underline{\hspace{2cm}}$$

$$21. \frac{3}{5} \cdot \frac{5}{10} = \underline{\hspace{2cm}}$$

$$22. \frac{9}{16} \cdot \frac{8}{15} = \underline{\hspace{2cm}}$$

$$23. \frac{3}{8} \div \frac{1}{6} = \underline{\hspace{2cm}}$$

**Orders of Operations:** Evaluate each of the following. Answer in simplified form.

$$24. 3 - 5 \cdot 2 = \underline{\hspace{2cm}}$$

$$25. 14 \div -7 + 9 \cdot 3 = \underline{\hspace{2cm}}$$

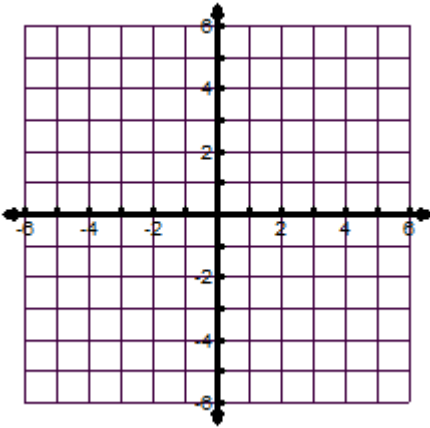
$$26. \frac{10 - 5^2}{9 \div -3} = \underline{\hspace{2cm}}$$

$$27. 12 \div 2 \cdot 3 = \underline{\hspace{2cm}}$$

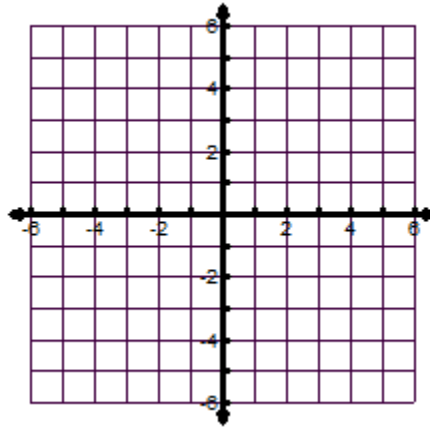
$$28. 5 - 3m^2 = \underline{\hspace{2cm}} \text{ (when } m = -10\text{)}$$

**Graphing Linear Functions:** Graph each of the equations below.

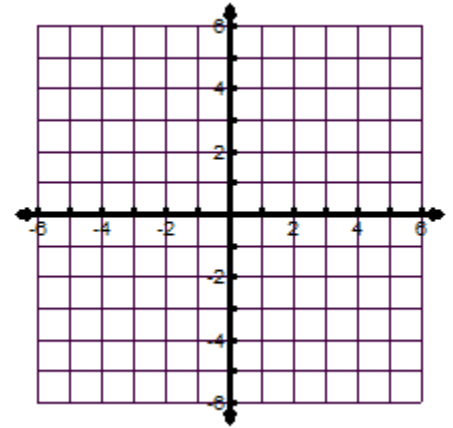
23.  $y = 3x - 2$



24.  $y = -\frac{3}{4}x + 2$

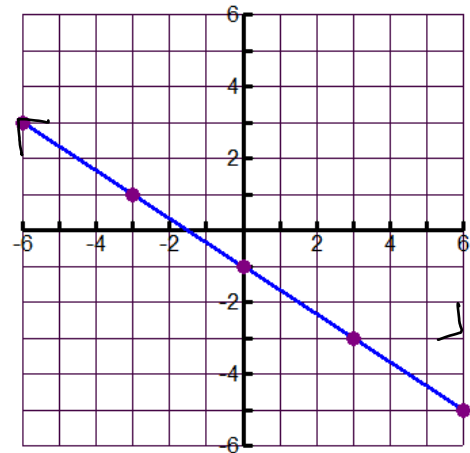


25.  $3x + 5y = 15$



26. Write the equation of the line graphed to the right.

$y =$  \_\_\_\_\_



27. Write the two consecutive whole number values that the given number is between. For instance, if the number is 3.2 it is between 3 and 4.

$\frac{7}{2}$  is between \_\_\_\_\_

$\frac{27}{4}$  is between \_\_\_\_\_

$\sqrt{5}$  is between \_\_\_\_\_

$\sqrt{50}$  is between \_\_\_\_\_

$\sqrt{70}$  is between \_\_\_\_\_

$\sqrt{150}$  is between \_\_\_\_\_

Describe how you did in math year's math class. When were you successful? What, if anything, was difficult for you about the class?

Name \_\_\_\_\_ Grade you will be in next school year \_\_\_\_\_

**Crimson Summer Enrichment Math Assessment Part 2A**  
(Calculator Section—For incoming 9<sup>th</sup> graders)

**Geometry:** Complete each of the questions below. Show your work and write your answer in the space provided. Your answer should include the correct units.

1. Sketch a rectangle that is 6 cm wide and 10 cm long. Then find the perimeter and the area of the rectangle. (Your answer should include correct units.)

Perimeter = \_\_\_\_\_

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

2. A rectangle has a perimeter of 50 cm and a width of 5 cm. Sketch the rectangle and find its length and area.

Length = \_\_\_\_\_

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

3. Sketch a triangle that has a base of 15 cm and a height of 4 cm. Then find the area of the triangle.

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

4. A square has a side length of 7 cm. Sketch the square and then find its perimeter and area.

Perimeter = \_\_\_\_\_

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

**Simplify Algebraic Expressions:** Simplify each of the expressions below. Write your answer in the space provided

5.  $x + x =$  \_\_\_\_\_

6.  $x + x + x =$  \_\_\_\_\_

7.  $3x + 7x =$  \_\_\_\_\_

8.  $10x - 2x =$  \_\_\_\_\_

9.  $x^2 + x^2 =$  \_\_\_\_\_

10.  $4x^2 + 5x^2 =$  \_\_\_\_\_

11.  $6xy + 3xy =$  \_\_\_\_\_ 12.  $6x^2y^2 + 3x^2y^2 =$  \_\_\_\_\_

13.  $8x + 7 - 2x + 5 =$  \_\_\_\_\_ 14.  $10x - (2x - 5) =$  \_\_\_\_\_

15.  $x \cdot x =$  \_\_\_\_\_ 16.  $x \cdot x \cdot x =$  \_\_\_\_\_ 17.  $3x \cdot 7x =$  \_\_\_\_\_

18.  $x^2 \cdot x^2 =$  \_\_\_\_\_ 19.  $4x^2 \cdot 5x^2 =$  \_\_\_\_\_ 20.  $6xy \cdot 3xy =$  \_\_\_\_\_

21.  $5(x + 4) =$  \_\_\_\_\_ 22.  $3x(5x + 4) - 8x - 5 =$  \_\_\_\_\_

**Solving Equations:** Solve for  $x$  in each of the equations below. Show all of your steps. Write your answer in simplified form in the space provided.

23.  $x =$  \_\_\_\_\_

$\frac{x}{8} = 3$

24.  $x =$  \_\_\_\_\_

$4x = 20$

25.  $x =$  \_\_\_\_\_

$x + 5 = -2$

26.  $x =$  \_\_\_\_\_

$12 - x = 4$

27.  $x =$  \_\_\_\_\_

$3x + 1 = 16$

28.  $x =$  \_\_\_\_\_

$6x + 1 = 19$

29.  $x =$  \_\_\_\_\_

$4x + 1 = x + 10$

30.  $x =$  \_\_\_\_\_

$5x - 1 = 3x + 11$

31.  $x =$  \_\_\_\_\_

$5x - 1 = 3x + 11$

**Using Percentages:** Answer each of the questions below.

32. A backpack that costs \$85.00 is on sale for 30% off. What is the sale price of the backpack?

Ans: \_\_\_\_\_

33. Bryce has a resting heart rate of 70. During exercise he wants to increase his heart rate by 40%. What will his heart rate be?

Ans: \_\_\_\_\_

34. 300 juniors attended prom. There are 480 students in the junior class. What percentage of juniors attended prom?

Ans: \_\_\_\_\_

35. On a test with 45 questions, Zach got 80% correct. How many questions did he answer correctly?

Ans: \_\_\_\_\_

Name \_\_\_\_\_ Grade you will be in next school year \_\_\_\_\_

**Crimson Summer Enrichment Math Assessment Part 2B**

(Calculator Section—For incoming 9<sup>th</sup> graders)

**Simplifying Expressions:** Use the distributive property and combining like terms to simplify each expression.

1.  $x^2 + x^2 =$  \_\_\_\_\_

2.  $x^2y^2 + x^2y^2 =$  \_\_\_\_\_

3.  $x \cdot x =$  \_\_\_\_\_

4.  $4x^2 + 5x^2 =$  \_\_\_\_\_

5.  $6x^2y^2 + x^2y^2 =$  \_\_\_\_\_

6.  $6x \cdot 5x =$  \_\_\_\_\_

7.  $8x + 7 - 2x + 5 =$  \_\_\_\_\_

8.  $10x - 2(3x + 7) =$  \_\_\_\_\_

9.  $4x^2 + 3x - 10x + 5x^2 =$  \_\_\_\_\_

10.  $10x - (2x - 5) =$  \_\_\_\_\_

11.  $3x(5x + 4) - 8x - 5 =$  \_\_\_\_\_

12.  $6x(3x - 2y) + 8xy =$  \_\_\_\_\_

13.  $(x + 7)(x - 5) =$  \_\_\_\_\_

14.  $(x + 7)^2 =$  \_\_\_\_\_

Evaluate each of the following functions.

$f(x) = 2x - 5$

$g(x) = x^2 + 3x$

$h(x) = 5x^2 - 1$

15.  $f(4) =$  \_\_\_\_\_

16.  $g(4) =$  \_\_\_\_\_

17.  $h(4) =$  \_\_\_\_\_

18.  $f(-2) =$  \_\_\_\_\_

19.  $g(-2) =$  \_\_\_\_\_

20.  $h(-2) =$  \_\_\_\_\_



Use the table below to the right to answer questions.

| x | f(x) |
|---|------|
| 1 | 3    |
| 2 | 4    |
| 3 | 5    |
| 4 | 6    |
| 5 | 7    |
| 6 | 8    |
| 7 | 9    |

21.  $f(3) =$  \_\_\_\_\_      22.  $f(4) =$  \_\_\_\_\_

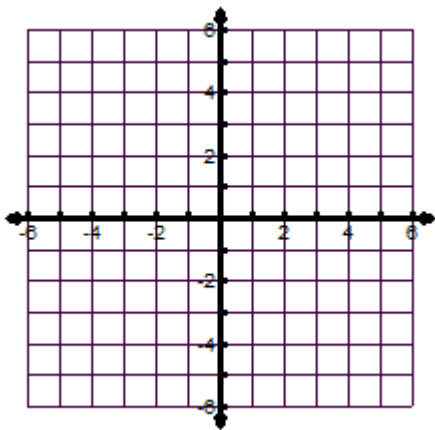
23.  $f(\text{_____}) = 3$       24.  $f(\text{_____}) = 4$

25. Write the equation of a line that passes through the points  $(1, -8)$  and  $(-4, 7)$

26. Write the equation of line that passes through the points  $(0, 2)$  and  $(2, 8)$ .

27. Solve the system by graphing

$y = 2x - 3$       Solution = \_\_\_\_\_  
 $y = -\frac{1}{3}x + 4$



28. Solve the system using elimination.

$5x + 2y = 13$       Solution = \_\_\_\_\_  
 $3x - y = 10$

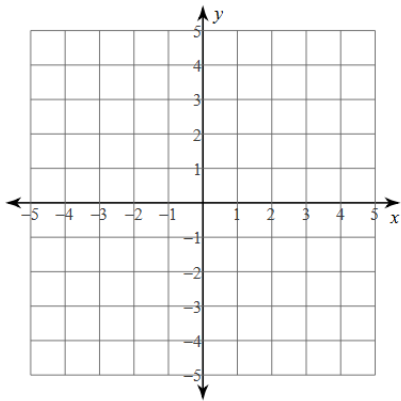
29. Find the x and y intercepts of  $y = 2x + 12$ .

30. Find the x and y intercepts of  $3x - 4y = 20$ .

31. Graph the system of inequalities.

$$y \geq -\frac{1}{2}x - 2$$

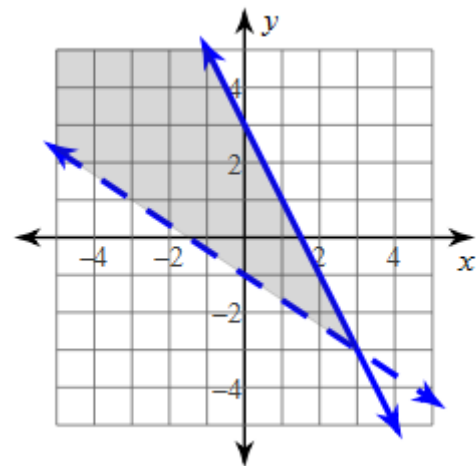
$$y < 2x + 3$$



32. Write the system of inequalities that corresponds with the graph

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33. For the quadratic function  $y = x^2 - x - 6$ , find the following information. Round to 3 decimal places.

X intercepts = \_\_\_\_\_

Y intercept = \_\_\_\_\_

Vertex = \_\_\_\_\_

Solve the following equations. Write the answer as a simplified fraction if necessary.

34.  $\frac{2}{3}x - 5 = 7$        $x =$  \_\_\_\_\_

35.  $3 - \frac{2}{3}x = 7$        $x =$  \_\_\_\_\_

36.  $3x - 5 = 8x + 2$        $x =$  \_\_\_\_\_

37.  $6x + 4 = 2(3x + 5) - 1$

$x =$  \_\_\_\_\_

38.  $6x + 4 = 3(3x - 1) + 7$        $x =$  \_\_\_\_\_

Show the steps you took to arrive at your answer. Box your final answer and include appropriate units.

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Ans: \_\_\_\_\_

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