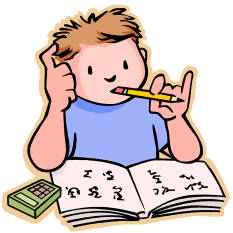
Algebra RH Midterm Information 2019-2020



Exam Date: Wednesday, January 22nd
Time: Periods 2 and 3

Miscellaneous Information:

- Absence-exam must be taken. Grades will not be issued until it is made up.
- The Midterm makes up 20% of the 2nd Quarter Grade
- It can also be used to replace a low test grade from Q2 or replace a test that was not taken due to an absence (it cannot do both)

What should you bring the day of the exam?

- Graphing calculator, ruler or straight edge, 2 sharpened pencils and 2 pens

Format:

Part I: 20 multiple choice questions (2 pts each)

Part II: 10 short answer questions (2 pts each)

Part III: 6 extended response questions (5 pts each)

Total Points: 90 pts.

Calculator:

- A graphing calculator is necessary on the day of the exam.
- Calculators will **NOT** be provided.

Study Process:

1. Review your notes then **redo** the review sheet and quiz/test for each unit.
2. Keep a list of questions and bring them to extra help and in-class review days.
3. **DO NOT** wait until the night before the exam to start preparing. Start studying immediately using any available time!
4. Use the Practice Problem Set to help you study.

In-Class Review Sessions:

- In-class review sessions will take place in the days prior to the exam.
- In-class review sessions will consist of reviewing the practice problem set and addressing student generated questions.
- Make sure you come prepared to review on those days.

Midterm Practice Problem Set

Answer the following questions. Show all necessary work. This practice problem set <u>does not</u> cover every topic that will appear on the midterm. <u>This should not be your only means of review!</u>

1. At a concert, $720 was collected for hot dogs, hamburgers, and soft drinks. All three items sold for $1.00 each. Twice as many hot dogs were sold as hamburgers. Three times as many soft drinks were sold as hamburgers. The number of soft drinks sold was:

   (1) 120 (2) 240 (3) 360 (4) 480

2. If $t^2 < t < \sqrt{t}$, then t could be:

   (1) - ¼ (2) 0 (3) ¼ (4) 4

3. The formula for potential energy is $P = mgh$, where P is potential energy, m is mass, g is gravity and h is height. Which expression can be used to represent g?

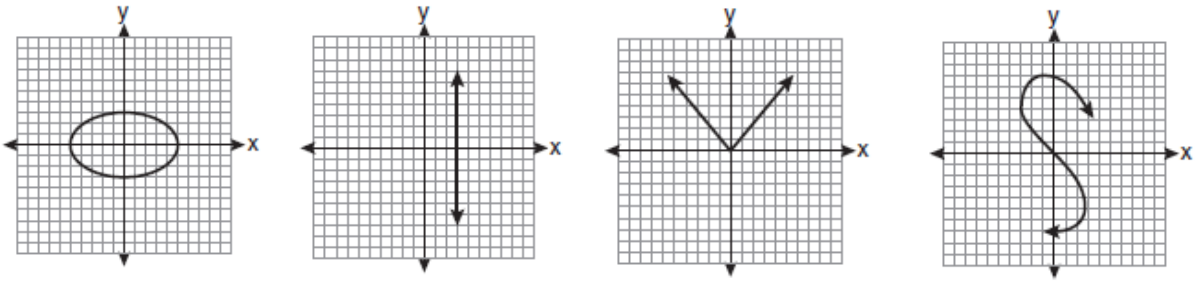
   (1) $P - m - h$ (2) $P - mh$ (3) $\frac{P}{m} - h$ (4) $\frac{P}{mh}$

4. What is an equation of a line that is parallel to the x – axis and contains the point (4,-2)?

   (1) x = 4 (2) x = -2 (3) y = 2 (4) y = -2

5. Which graph represents a function?

   (1) (2) (3) (4)



6. Which of the following sets of numbers is closed under subtraction?

   (1) natural numbers
   (2) odd integers
   (3) whole numbers
   (4) rational numbers

7. What is the y-intercept of the line whose equation is $2x - 3y - 12 = 0$?

8. Solve: $\frac{x}{-2} < 6$

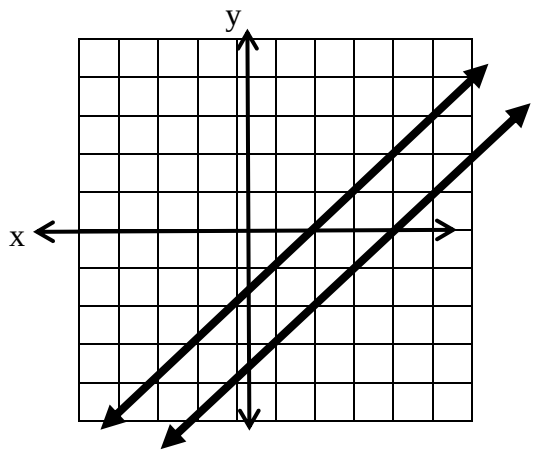
9. **Write** an inequality to represent the following situation.

   A yearbook company promises to give the junior class a picnic if they spend at least $28,000 on yearbooks and class rings. Each yearbook costs $25, and each class ring costs $140. How many yearbooks and class rings must the junior class buy to get their picnic?

10. Simplify: $\frac{(3xy^4)(x^{-2}y^6z)}{x^{-3}y^5}$

11. Solve for h: $A - hb = hc$

12. How many solutions does this linear system have?



13. Simplify and express in standard form: $(\frac{1}{3}x^2 + 4x - 3)[(2x^2 + 6x + 5) - (6x^2 + 3x + 5)]$

14. Is the following table a function?

Input	Output
1	2
2	1
3	5
3	4

15. Write the equation of a line that is parallel to y = 2x – 5 and has a y-intercept of -3.

16. What is the slope of a line containing the points (3, 4) and (-6, 10)?

17. Evaluate $\frac{x^2 - 4y}{2}$ when x = 4 and y = -3

18. Solve for x. $\frac{x-5}{4} = \frac{2x-10}{3}$

19. Solve: $\frac{3x}{5} - \frac{x+1}{2} = 6$

20. Solve: $2|x-2| = 6$

21. Simplify: $2x(x-4)^2$

22. The sum of the ages of three brothers is 63. If their ages can be represented as consecutive integers, what is the age of the middle brother?

23. The perimeter of a triangle is 80cm. The first side of the triangle is 7cm shorter than the second side. The third side is 4cm longer than the first side. Find the length of each side.

24. The distance a free falling object has traveled can be modeled by the equation $d = \frac{1}{2}at^2$

where a is acceleration due to gravity and t is the amount of time the object has fallen.

a) Express t in terms of a and d.

b) Find the amount of time an object spent falling if it accelerated 2.5 inches/sec^2 and traveled a distance of 20 inches.

25. Michael put $5.00 in dimes, nickels and quarters in his piggy bank. He had 8 less dimes than nickels and 4 more quarters than nickels. How many coins of each type are there? (Solve algebraically)

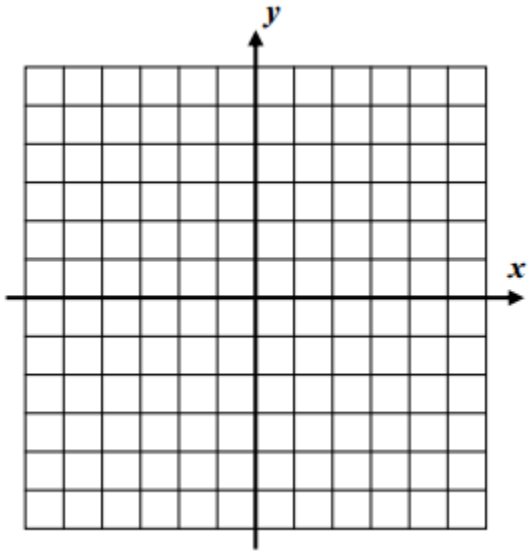
26. Two cars take a trip following the same route. One leaves at 9am averaging 48mph, the other leaves at 9:30am averaging 56mph. At what time of day will the second car catch up to the first car?

27. Solve and graph the solution on a number line. $2x - 4 \leq 8$ or $-3x > 9$

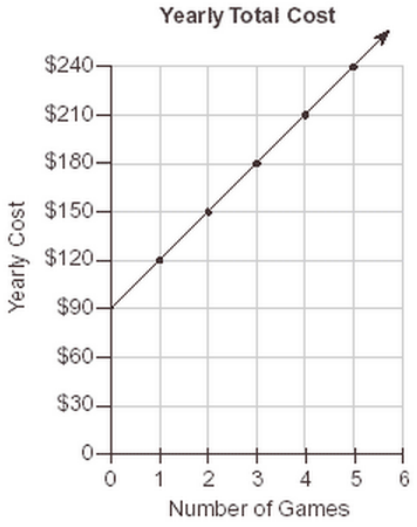
28. Solve the following system algebraically. $2y - 3x = -11$
$y - 5 = -2x$

29. Graph $4 - 2y > 6x$ on a coordinate plane.

****** OMIT THIS QUESTION***



30. Examine the graph pictured below which shows yearly cost based on the number of golf games played at a private club.



a) Write an equation that represents the relationship shown.

b) What is the rate of change? What does it represent?

c) What is the y-intercept? What does it represent?

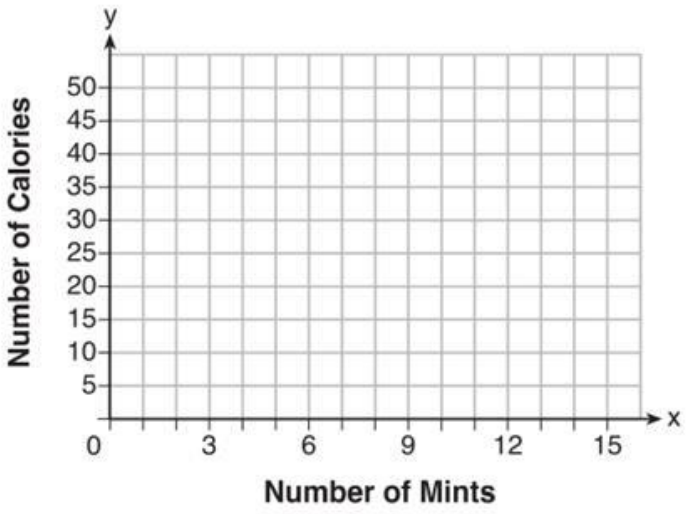
31. To thaw a specimen stored at -25° C, the temperature of a refrigeration tank is raised every hour. The temperature in the tank after x hours can be described by the function $y = -25 + 5x$.

a) Identify the y-intercept of your function. Describe its meaning.

b) Identify the rate of change of your function. Describe its meaning.

32. Max purchased a box of green tea mints. The nutrition label on the box stated that a serving of three mints contains a total of 10 calories.

a) On the axes below, graph the function that represents the relationship described above.



b) Write an equation that represents the function.

c) A full box of mints contains 180 calories. Use the equation to determine the total number of mints in the box.

33. Emma recently purchased a new car. She decided to keep of track of how many gallons of gas she used on five of her business trips. The results are shown in the table below.

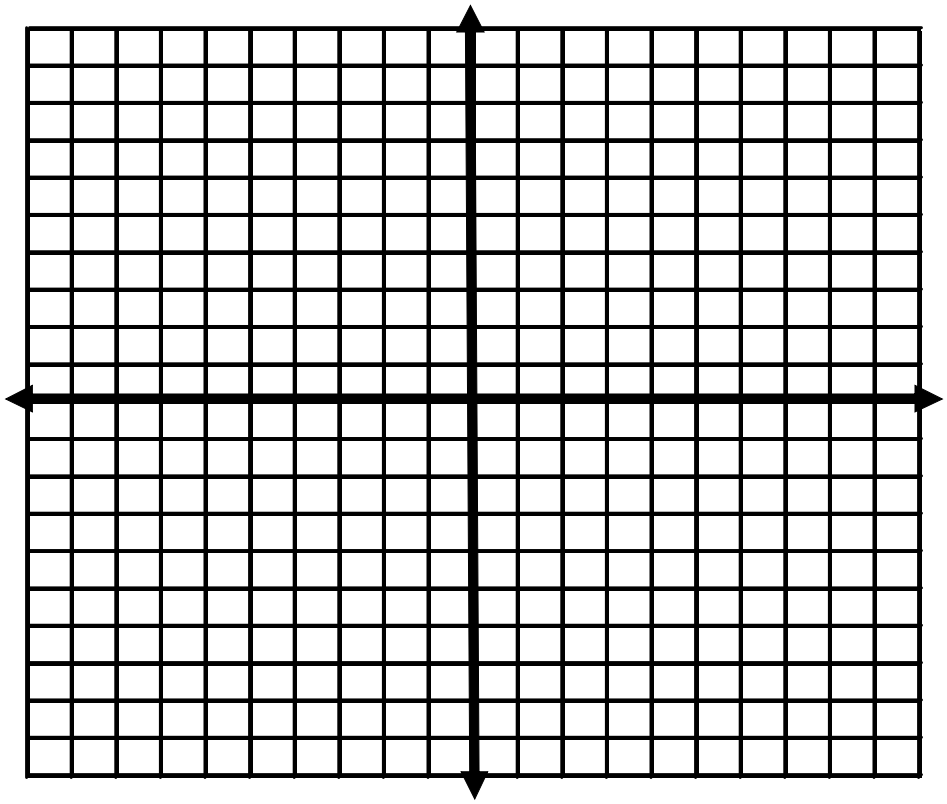
Miles Driven	Number of Gallons Used
150	7
200	10
400	19
600	29
1000	51

a) Write the linear regression equation for these data where miles driven is the independent variable (Round all values to the nearest hundredth).

b) Identify the correlation coefficient rounded to the nearest thousandth. Explain its meaning.

c) Emma plans to take a business trip next week that requires her to drive 850 miles. Using your regression equation, predict the number of gallons of gas Emma will use.

34. On the set of axes below, draw the graph of the equation $y = -\frac{3}{4}x + 1$ defined over the domain $-8 \leq x \leq 8$. State the range of the function.



35. Name each property being represented below:

a. $3 + (7 + 4) = 3 + (4 + 7)$

b. $-5 \cdot -\frac{1}{5} = 1$

c. $\frac{2}{3}x + 0 = \frac{2}{3}x$

36. Simplify each radical expression

a. $\sqrt{54}$ b. $\sqrt{48} + \sqrt{-49}$ c. $\sqrt{6}\left(4 - \sqrt{12}\right)$

37. Solve each equation:

a. $4a^{\frac{2}{5}} - 3 = 33$ b. $16^{2x-1} = \left(\frac{1}{8}\right)^{x+5}$

38. Find the intercepts of each equation

a. $5x + 2y = -15$ b. $3y - 12 = 4x$