Hello 8th graders!

I hope this finds you all well! Attached is your summer work.

A couple of reminders:

- Show ALL work on separate sheet of paper
- Check and correct your answers
- Make sure it is neat and legible
- Make note of questions or concepts you are having trouble with.

If you need anything at all please don't hesitate to reach out. Please do not wait until the last week to complete this packet. A suggested schedule is attached, so you can manage your time.

Enjoy the rest of your summer!

Suggested Schedule

Week 1 - July 3 - Solving Equations

Week 2 - July 10 - Inequalities

Week 3 - July 17 - Properties of exponents and scientific notation

Week 4 - July 24 - Percents and Proportions

Week 5 - July 31 - Factors, prime factorization, GCF and LCM

Week 6 - August 7 - Pythagorean Theorem, Functions, Graphing

Week 1 - Solving equations

1. 13x - 7 - 10x = 2

2. 4(x + 5) = 16

3. -2(x + 11) = 6

4. -5(2x + 1) = 25

5. 2 = 4(3x -8) - 11k

6. -5x - (8 - x) = 12

7. -5 = 0.25(4 + 20x) - 8x

8. 25x + 74 = 23x + 92

9. 25x = 5(5t + 1)

10. 2(-4x - 13) = 37 + 13x

11. $\frac{7}{8}x = -8$

12. $-\frac{13}{20} = \frac{1}{4} + \frac{3}{5}x$

13. 10 = 8.22x - 3.15s

14. 9.2x + 1.4 = 12.9

15. You spend $60 on clothes buy 3 packages of candy. Your friend spends nothing on cloths and buys 8 packages of candy. You spend the same amount of money. All the candy costs the same amount. How much does each package of candy cost?

16. A pasta machine costs $33. The ingredients to make one batch of pasta cost $0.33. The same amount of pasta purchased at a store cost $0.99. How many batches of pasta will you have to make for the cost of the machine and ingredients to equal the cost of buying the same amount of pasta at the store?

17. To join a gym your friend pays a one time fee of $75 and $45 per month for the duration of the membership. Your friend has paid a total of $345. How long has your friend been a member of the gym?

Week 2 - Inequalities

Solve and graph the inequality

1. $x + 75 > -125$

2. $\frac{x}{12} \geq 3$

3. $-3x - 6 \leq -9$

4. $4(2 - x) \geq -12$

5. $2x - 5 < -21 - 2x$

6. $\frac{5}{6}x - \frac{1}{5} < -\frac{8}{15}$

7. $\frac{1}{7}x + \frac{53}{56} > \frac{6}{7}$

8. $\frac{2}{15}x - \frac{4}{5} < \frac{2}{3}$

Write the verbal sentence as an inequality. Then solve the inequality

9. 6 less than the product of a number and -8 is less than 10

10. A number divided by -3 is less than 6

11. Five times a number is at least 45

12. A sign in a clothing store says to take ⅓ off the marked price of a shirt. You have $20 in cash and a $5 gift certificate. What are the original prices of the shirts you can afford to buy?

13. A ski resort charges $45 for an all-day lift pass and $40 per day for renting boots and a snowboard. At a store, you can buy boots and a snowboard for $360. How many times must you go snowboarding at the ski resort for the cost of buying your own boots and snowboard to be less than renting them?

14. You plan to go ice skating often this winter. The skating rink charges $4 for admission. You can either rent ice skates at the skating rink for $5 per day or buy your own pair for $45. How many times do you have to use the ice skates in order for the cost of buying them to be less than the total cost of renting them?

Week 3 - Properties of exponents and scientific notation

1. $16x^4 \cdot x^2$

2. $5x \cdot 4x^9$

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

4. $\frac{12x^5}{8x^2}$

5. $\frac{12x^4 \cdot x^4}{x}$

6. $\frac{12x^2 \cdot x^8}{16x^5}$

7. $(p^3q^2)(p^4q^3)$

8. 12^0

9. $x^{-3} \cdot x^{-1}$

10. $z^{-5} \cdot z^{-1}$

11. $\frac{15b^{-5}}{15b^3}$

12. $\frac{11g^2}{g^{-4}}$

13. $\frac{c^2d^{11}}{c^8d^5}$

14. $\frac{x^2y}{x^{10}y^7}$

15. Scientists have made a tiny bicycle chain out of silicon links that are thinner than a human hair. The centers of the links are 0.00005 meters apart. Write the distance in scientific notation.

16. Write the number in scientific notation : 3,721,000

Week 4 - Percents and proportions

Find the unit rate

1. $\frac{24\ ounces}{4\ servings}$

2. $\frac{5\ laps}{20\ minutes}$

3. You worked 15 hours and earned $195. How much did you earn per hour?

Solve the proportion

4. $\frac{17}{x} = \frac{34}{46}$

5. $\frac{50}{x} = \frac{25}{7}$

Solve the percent problems

6. What number is 16% of 75?

7. What percent of 48 is 45?

8. 27 is 7.5% of what number?

9. What percent of 120 is 108?

10. Last year you spent $210 on clothes. You spent 37.5% of the amount on school clothes. How much money did you spend last year on school clothes?

11. Find the percent of decrease from 55 to 33.

12. Find the percent increase from 128 to 176

13. A hat costs $28 after a 30% discount is applied. What was the hat's original price?

14. In a survey of 380 people, 25% said that they enjoy reading before going to sleep. How many of the people surveyed enjoy reading before going to sleep?

15. A baseball team won 55% of its 160 games during a season. How many games did the team win during the season?

16. Your friend has 480 stamps in a collection. Of these 156 stamps depict historical events. What percent of the stamps in the collection depict historical events?

Week 5 - Factors, prime factorization, GCF, and LCM

Write the prime factorization of the number

1. 58

2. 63

Find the greatest common factor of the numbers

3. 21, 99

4. 12, 36

5. 9, 26

6. 16x, 36x

Find the least common multiple of the numbers

7. 16, 24

8. 16, 24

9. 30, 54

10. 15, 30, 50

11. A summer music camp has 88 participants. The camp has 32 vocalists, 16 drummers, 24 guitarists, and 16 bassists. What is the greatest number of identical bands that can be formed using all the participants?

12. Sara has 16 red flowers and 24 yellow flowers. She wants to make bouquets with the same number of each color flower in each bouquet. What is the greatest number of bouquets she can make?

13. The school cafeteria serves tacos every sixth day and cheeseburgers every eight day. If tacos and cheeseburgers are both on today's menu, how many days will it be before they are both on the menu again?

14. Two clocks are turned on at the same time. One clock chimes every 15 minutes. The other clock chimes every 25 minutes. In how many minutes will they chime together?

Week 6 - Pythagorean Theorem, Functions, Graphing

Pythagorean Theorem

Using the Pythagorean Theorem, find the unknown length

1. a = 20, b = 21, c = ?

2. a = 27, b = ?, c = 40

3. A ladder that is 15 feet long is placed against a wall. The bottom of the ladder is 5 feet from the wall. To the nearest foot, how far up the wall does the ladder reach? (draw a picture)

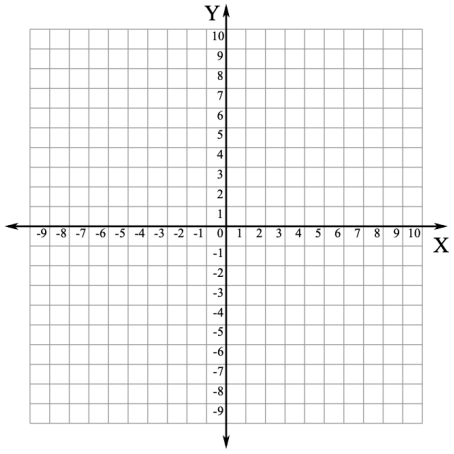
Relations and Functions

4. Identify the domain and range of the relation

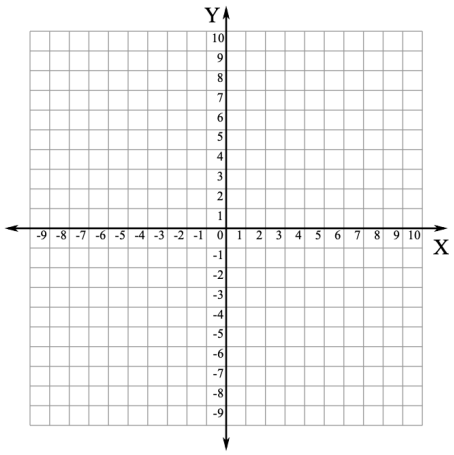
(0, 1), (2, 4), (3, 7), (5, 4)

5. Represent the relation as a graph. Then tell whether the relation is a function

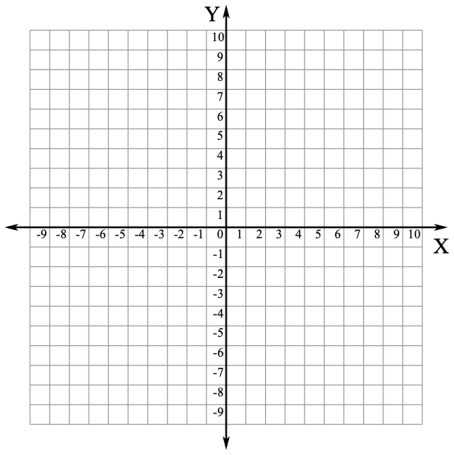
(-4, 2), (2, 3), (4, 8), (0, 3), (-2, 2)



6. Graph by making a table of solutions $y = 2x - 1$



7. Graph $y = 3 \; and \; x = -2$ (on the same graph)



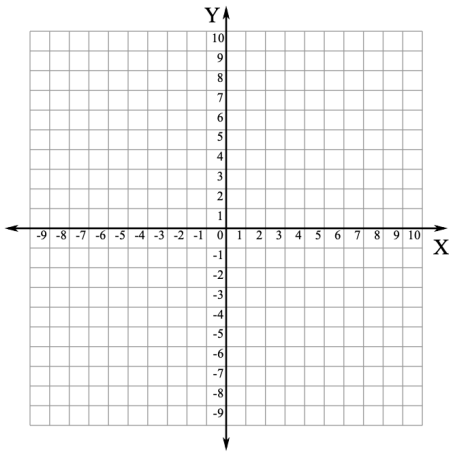
8. Rewrite in slope-intercept form ($y = mx + b$)

   a. 2x - 3y = 12

   b. -2y = 3x - 4

9. Graph using the slope and y-intercept.

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



10. Graph using the slope and y -intercept

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