

BelovED Community Charter School

Pre Algebra
Grade 8
Summer Packet

2021

Name: _____

BelovED Community Charter School
Middle School Mathematics Department
508 Grand Avenue
Jersey City, NJ 07302

June 2021

Dear Parents and Guardians:

Attached are the summer curriculum review materials for your scholar entering Pre-Algebra 8. This booklet was prepared by the BelovED Community Charter School Middle School Math Department and contains topics that reflect content learned in prerequisite courses. These materials must be completed and brought to class on the first day of school in September.

Your child is required to complete this booklet over the summer. Completion of the packet on time with work shown will count as a 100% test grade on the first day of school to be added to your Quarter 1 average.

This packet should be completed with the use of a calculator. In the event that you need assistance with this work, please search for instructional videos at www.khanacademy.org.

Thank you for your cooperation.

Sincerely,

Ms. Victoria de Leon
Academic Dean



Mrs. Didi Martín
Dean of Students

Summer Course Work

Pre-Algebra 8

Topics

1. Investigating Patterns

- a. Analyzing Sequences
- b. Increasing and Decreasing Sequences

2. Operation with Rational Numbers

- a. Adding and Subtracting Fractions and Decimals
- b. Multiplying and Dividing Fractions and Decimals
- c. Converting Rational Numbers to Decimals

3. Powers and Roots

- a. Square roots
- b. Cubes
- c. Exponents
- d. Order of Operations

4. Number System

- a. Ordering and comparing Integers
- b. Equations
- c. Inequalities

All pages **MUST** show the work in order for the work to be accepted. If more paper is needed, the work may go on a separate page. This booklet must be kept neat and in order and is to remain in your notebook as a reference guide. If you require any help with the concepts, you can search the skill on www.khanacademy.org and watch a video on the topic.

Pre-Algebra Grade 8

1. Complete the table below by investigating the sequence. The first one is done for you.

Sequence	Increasing or Decreasing?	Next Term in the Sequence	Description of Pattern
0, 5, 10, 15 ...	Increasing	20	+5
-8, -4, -2, -1, ...			
1.5, 2.75, 4, ...			
$\frac{1}{8}, \frac{1}{4}, \frac{1}{2}, \dots$			
$2, \frac{5}{4}, \frac{1}{2}, \dots$			

2. Sequences do not always have to include mathematical operations. Look at the sequences below. Describe what the pattern of the sequence is and give the next three terms.

a. 3.12, 3.1212, 3.121212, ...

b. $\frac{1}{2}, \frac{1}{22}, \frac{1}{222}, \dots$

c. 1, 12, 123, ...

d. Z, Y, X, W, ...

e. J, F, M, A, ...

Evaluate each expression. Show all of your work to receive credit.

3. $0.34 + 495.5 + 99.008$	4. $87.6 - 53.909$
5. 1.08×2.014	6. $14.127 \div 5.1$
7. Linda is running in a marathon, which is 26.2 miles long. Checkpoint 1 is 3 miles past the start; checkpoint 3 is 3.75 miles after checkpoint 2. When Linda makes it to checkpoint 3, how many miles does she have to run to complete the marathon?	L 8. Daniel is buying a video game that costs \$52.99. The sales tax is found by multiplying the cost of the video game by 0.07. How much is the sales tax for the video game? What is the total cost, including tax?

Evaluate each expression. Show all of your work to receive credit.

9. $4\frac{1}{2} + 1\frac{2}{7} + 3\frac{1}{3}$

10. $132\frac{1}{6} - 99\frac{5}{6}$

11. $9\frac{2}{7} \cdot 2\frac{2}{13}$

12. $21 \div 3\frac{1}{2}$

13. Gary is $61\frac{1}{8}$ inches tall. His friends Gino and Gilbert are $56\frac{1}{2}$ inches tall and $63\frac{1}{8}$ inches tall. What is the average height of the three friends?

14. A machine can make a box in $1\frac{3}{10}$ seconds. How many boxes can the machine make in 1 hour?

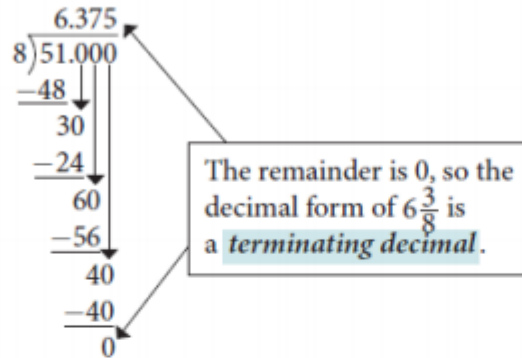
15. Express each fraction as a decimal. There is an example listed below to help. Show all your work to receive credit.

Express $6\frac{3}{8}$, the length in inches of the camel spider Sarai researched, as a decimal.

Step 1: Write the mixed number $6\frac{3}{8}$ as an improper fraction.

$$6\frac{3}{8} = 6 + \frac{3}{8} = \frac{48}{8} + \frac{3}{8} = \frac{51}{8}$$

Step 2: Divide the numerator by the denominator.


$$\begin{array}{r} 6.375 \\ 8 \overline{)51.000} \\ \underline{-48} \\ 30 \\ \underline{-24} \\ 60 \\ \underline{-56} \\ 40 \\ \underline{-40} \\ 0 \end{array}$$

The remainder is 0, so the decimal form of $6\frac{3}{8}$ is a *terminating decimal*.


Solution: The decimal form of $6\frac{3}{8}$ is 6.375.

a. $7\frac{7}{8}$	b. $2\frac{1}{6}$
c. $5\frac{3}{4}$	d. $12\frac{5}{9}$

16. Complete the table below.

Exponential Form	Product Using the Base as a Factor Twice	Standard Form
5^2	$5 \cdot 5$	25
2^2		
1^2		
7^2		
15^2		

17. Complete the table for squares with given lengths. The first one is done for you.


 2 in

Perimeter is equal to the sum of all of its sides. $P = 2+2+2+2$ $P = 8$ in
 Area of a square is s^2 . $A = 2 \times 2$ $A = 4$ in²

Side Length (in cm)	Perimeter of Booth (in cm)	Area of Booth (in cm)
2	8 in	4 in
3		
	16	
	20	
		49
		100
n		

18. Find the square root of each number.



Step 1: The area is the square of the length of a side. Here, 36 ft^2 is the square of s . To find s , find the **square root** of 36 ft^2 . The symbol for square roots is $\sqrt{\quad}$.

$$\sqrt{36} = s$$

Step 2: To solve $\sqrt{36} = s$, think about which number times itself equals 36.

$$\sqrt{36} = 6$$

Solution: The length of a side of the booth is 6 ft.

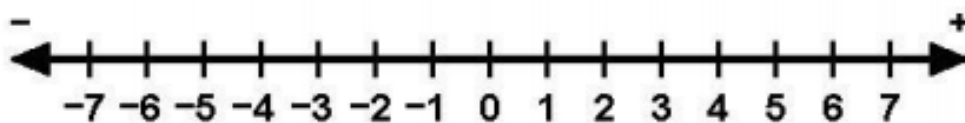
a. $\sqrt{16}$	b. $\sqrt{81}$	c. $\sqrt{100}$
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19. Use the order of operations to solve each expression. Show all of your work to get credit.

a. $(16 - 10)^2 \div 4$	b. $7^2 + (5 - 3)^3$
c. $\left(\frac{1}{2}\right)^4$	d. $\sqrt{(50 + 50)}$

20. Place the numbers on the number line.

$$-2.1, 5, 0, -\frac{1}{2}, -6.5, 7\frac{3}{4}$$



21. Use the =, < or > symbols to complete the following statement.

a. -4.5 _____ -4

b. $\frac{1}{2}$ _____ $.5$

c. -8.3 _____ -8.75

d. -103 _____ -100

22. Solve each equation and check your solution.

a. $7.8s = 499.2$	Check work:
b. $10n = 420$	Check work:
c. $\frac{4}{5}y = 16$	Check work:
d. $\frac{x}{3.8} = 4$	Check work:

23. A car can travel 60 miles per hour.

a. Create a table showing how far the car travels in 5 hours.

b. Write an equation to determine the distance d that the car can travel in t hours.

c. How long will it take the car to travel 540 miles? Explain your reasoning.

d. How far will the car travel in 12 hours? Explain your reasoning.

24. Write inequalities for the following statements.

a. The temperature was less than 20° F on the morning of the test.

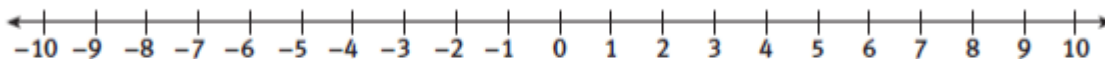
b. More than 40 students were in her flight school class.

c. Training uniforms cost at least \$50.

d. No more than 25 students in the class will get a job with the airline.

25. Graph the following inequalities.

a. Graph $x < 8.5$.



b. Graph $\frac{3}{2} \leq x$.

