



BeloveED Community Charter School
Middle School Academy

Entering 8th Grade
Math Summer 2023 Packet



Name: _____

Middle School Mathematics Department
508 Grand St.
Jersey City, NJ 07302



June 2023

Dear rising 8th graders and families,

This packet contains math practice problems for you to complete over the summer. The BelovED Community Charter School Middle School Math Department prepared the packets and selected topics that are prerequisites for the math course you will take during the 2023-2024 school year.

Each section of the packet contains the title of the associated Khan academy unit. You can find examples and additional practice problems by searching the unit title in the Khan Academy search engine at www.khanacademy.org.

This packet must be completed and brought to math class on the first day of school in September. Completion of the packet on time with all work shown will result in a 100% test grade during the first week of school. This will contribute to your Quarter 1 average.

Complete this packet **WITHOUT A CALCULATOR** and be sure to **SHOW ALL WORK** for every problem. We are looking forward to an excellent 2023-2024 school year!

Thank you,

Ms. Camille Sanchez
Middle School Math Department Chair



NO CALCULATOR- SHOW ALL WORK IN BOX

Khan academy unit: Negative numbers: addition and subtraction

1.	<p>Evaluate $-3 - (-4) - (-2) + 1$.</p> <p><input type="text"/></p>
2.	<p>Michael is doing an underwater handstand. His feet are sticking up 0.5 meters above the surface of the water. Michael's hands are 1.8 meters directly below his feet.</p> <p>What is the position of Michael's hands relative to the surface of the water?</p> <p><input type="text"/> meters</p>
3.	<p>Subtract.</p> <p>$3 - (-6) =$ <input type="text"/></p>
4.	<p>Reduce to simplest form.</p> <p>$-\frac{5}{12} - \left(-\frac{9}{3}\right) =$ <input type="text"/></p>



5.

Subtract.

$$6\frac{1}{4} - 3\frac{5}{8} = \boxed{}$$

6.

Estimate.

$$7.7 - 3.11 \approx$$

Choose 1 answer:

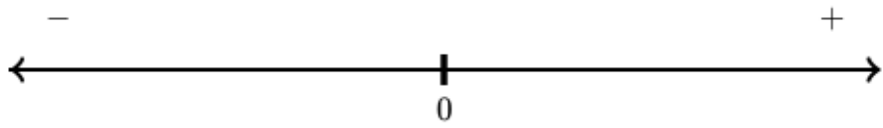
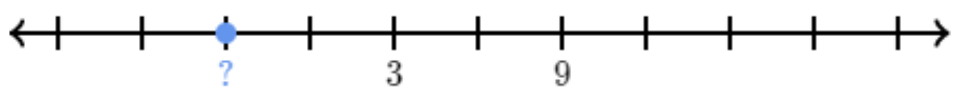
(A) 0

(B) 2

(C) 5

(D) 8



7.	<p>Which of the following is a correct interpretation of the expression $-2 + (-7)$?</p> <p>Choose 1 answer:</p> <p>_____</p> <p>(A) The number that is 2 to the <i>left</i> of 7 on the number line</p> <p>_____</p> <p>(B) The number that is 2 to the <i>right</i> of 7 on the number line</p> <p>_____</p> <p>(C) The number that is 7 to the <i>left</i> of -2 on the number line</p> <p>_____</p> <p>(D) The number that is 7 to the <i>right</i> of -2 on the number line</p> <p>_____</p> 
8.	<p>The blue dot is at what value on the number line?</p>  <p>_____</p>
9.	<p>Evaluate $1 + \left(-\frac{2}{3}\right) - (-m)$ where $m = \frac{9}{2}$.</p> <p>_____</p>



10.	<p>What is the sign of $3.456 + (-3.456)$?</p> <p>Choose 1 answer:</p> <p>_____</p> <p><input type="radio"/> (A) Positive</p> <p>_____</p> <p><input type="radio"/> (B) Negative</p> <p>_____</p> <p><input type="radio"/> (C) Neither positive nor negative—the sum is zero.</p>
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Khan academy unit: Negative numbers: multiplication and division

11.	<p>$-7 \times (-9) = ?$</p> <p><input type="text"/></p>
12.	<p>$0 \div (-4) = ?$</p> <p><input type="text"/></p>
13.	<p>Evaluate the following expression.</p> <p>$1 \times (-4) - 8 \times \frac{9}{-3}$</p> <p><input type="text"/></p>



14.	<p>Which of the following expressions are equivalent to $-0.5(1.7 + 1.7)$?</p> <p>Choose all answers that apply:</p> <p>_____</p> <p>(A) $-0.5 \cdot 1.7 - 0.5 \cdot 1.7$</p> <p>_____</p> <p>(B) $2(-0.5)(1.7)$</p> <p>_____</p> <p>(C) None of the above</p>
15.	<p>Solve for z:</p> $-4.75 = \frac{z}{2}$ <p>$z =$ <input type="text"/></p>
16.	<p>_____</p> $\frac{2}{9} \times \left(-\frac{6}{5}\right)$ <p><input type="text"/></p>



17.	<p>Divide. <i>Write your answer in simplest form.</i></p> $-\frac{8}{3} \div \frac{1}{4} = ?$ <p style="text-align: center;"><input style="width: 100px; height: 20px;" type="text"/></p>
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Khan academy unit: Fraction, decimals, & percentages

18.	<p>Which decimal is equivalent to $\frac{25}{6}$?</p> <p>Choose 1 answer:</p> <p>_____</p> <p>(A) $4.\bar{1}$</p> <p>_____</p> <p>(B) $4.\bar{16}$</p> <p>_____</p> <p>(C) $4.1\bar{6}$</p> <p>_____</p> <p>(D) $4.1\overline{667}$</p> <p>_____</p>
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19.	<p>Sathish is going on a 2100-kilometer road trip with 2 friends, whom he will pick up 150 kilometers after he begins the trip and drop off when there are 150 kilometers remaining. The car consumes 6 liters of gas for every 100 kilometers, and gas costs \$1.20 per liter.</p> <p>Sathish will pay for all of the gas when he is alone in the car, but he and his friends will split the cost evenly when they are together.</p> <p>How much will Sathish pay for gas?</p> <p>\$ <input style="width: 80px; height: 20px;" type="text"/></p>
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20.	$-\frac{13}{20} - \frac{7}{5} = \boxed{}$ <p><i>Enter the answer as an exact decimal or simplified fraction.</i></p>
21.	<p>Landen spent L hours at the beach last weekend. Matéo spent 15% fewer hours at the beach than Landen did.</p> <p>Which of the following expressions could represent how many hours Matéo spent at the beach last weekend?</p> <p>Choose 2 answers:</p> <hr/> <p>(A) $L - \frac{1}{15}L$</p> <hr/> <p>(B) $L(1 - 0.15)$</p> <hr/> <p>(C) $0.15L$</p> <hr/> <p>(D) $L - \frac{15}{100}$</p> <hr/> <p>(E) $L - \frac{3}{20}L$</p> <hr/>
22.	<p>Express 10.31 as a mixed number.</p> <p><input type="text"/></p>



Khan academy unit: Rates and proportional relationships

23.

The quantities x and y are proportional.

x	y
14	1.4
16	1.6
21	2.1

Find the *constant of proportionality* (r) in the equation $y = rx$.

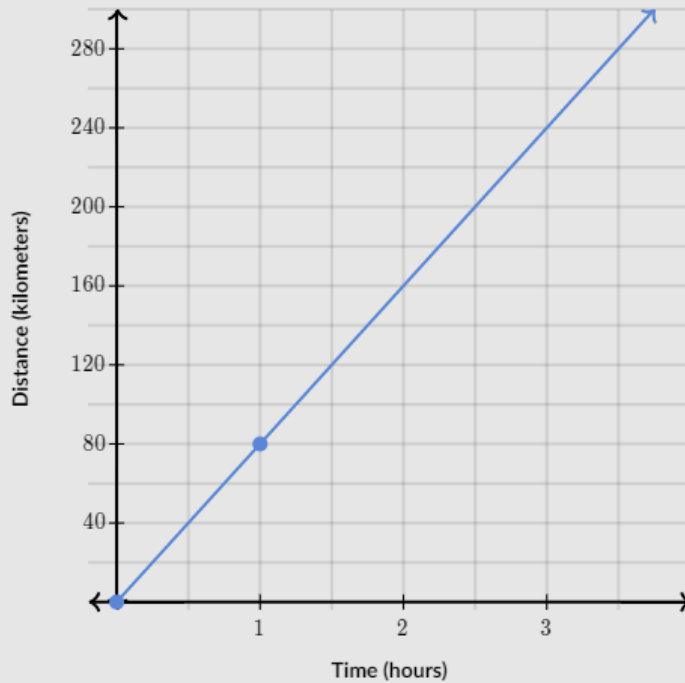
$r =$

24.

A car travels down a highway at a constant speed shown in the graph below.

Find the speed of the car.

kilometers per hour





25.	<p>A unicorn daycare center requires there to be 2 supervisors for every 18 baby unicorns.</p> <p>Write an equation that shows the relationship between n, the number of supervisors, and u, the number of baby unicorns.</p> <p>Please note that this is a magical daycare center, so fractional supervisors are allowed.</p> <p><input type="text"/></p>
26.	<p>Which equation has a constant of proportionality equal to $\frac{1}{2}$?</p> <p>Choose 1 answer:</p> <p>_____</p> <p>(A) $y = 2x$</p> <p>_____</p> <p>(B) $y = 4x$</p> <p>_____</p> <p>(C) $y = \frac{3}{6}x$</p> <p>_____</p> <p>(D) $y = \frac{3}{4}x$</p> <p>_____</p>

Khan academy unit: Expressions, equations, & inequalities

27.	<p>Which expressions are equivalent to $4(-5z + 2) + (-6)$?</p> <p>Choose all answers that apply:</p> <p>_____</p> <p>(A) $20z - 2$</p> <p>_____</p> <p>(B) $2(-10z + 1)$</p> <p>_____</p> <p>(C) None of the above</p>
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28.	<p>Which expressions are equivalent to $q + p + q + p + q$?</p> <p>Choose all answers that apply:</p> <p>_____</p> <p>(A) $2p + 3q$</p> <p>_____</p> <p>(B) $2(p + q) + q$</p> <p>_____</p> <p>(C) None of the above</p> <p>_____</p>
29.	<p>Evaluate $\frac{3}{2}y - 3 + \frac{5}{3}z$ when $y = 6$ and $z = 3$.</p> <p><input type="text"/></p>
30.	<p>Combine the like terms to create an equivalent expression.</p> <p>$4q + 3 + 2q - 1$</p> <p><input type="text"/></p>
31.	<p>Distribute to create an equivalent expression with the fewest symbols possible.</p> <p>$(6m - 7) \cdot 4 =$ <input type="text"/></p>



32.	<p>Lois and Clark own a company that sells wagons. The amount they pay each of their sales employees (in dollars) is given by the expression $12h + 30w$ where h is the number of hours worked and w is the number of wagons sold.</p> <p>What is the amount paid to an employee that works 6 hours and sells 3 wagons?</p> <p>\$ <input type="text"/></p>
33.	<p>An electric company charges a certain rate per kilowatt-hour (kWh) of electricity used and an administrative fee of \$3.50. The company charged Zhao \$63.25 for using 800 kWh of electricity.</p> <p>Zhao uses the equation, $63.25 = 800r + 3.50$ to represent the situation.</p> <p>What does the variable r represent in the equation?</p> <p>Choose 1 answer:</p> <p><input type="radio"/> (A) The number of kilowatt-hours Zhao used</p> <p><input type="radio"/> (B) The charge per kilowatt-hour</p> <p><input type="radio"/> (C) The amount of the total charge that depends on the number of kilowatt-hours used</p>



34.

The dance committee of Pine Bluff Middle School earns \$72 from a bake sale and will earn \$4 for each ticket they sell to the Spring Fling dance. The dance will cost \$400.

Write an inequality to determine the number, t , of tickets the committee could sell to have money left over after they pay for this year's dance.

What is the solution set of the inequality?

Choose 1 answer:

(A) $t < 82$

(B) $t \leq 82$

(C) $t > 82$

(D) $t \geq 82$

35.

Simplify to create an equivalent expression.

$$2 - 6(-5t + 1)$$

Choose 1 answer:

(A) $-30t - 4$

(B) $30t + 3$

(C) $30t - 4$

(D) $-5t - 4$



36.	<p>Liam had \$250. Then, he and his classmates bought a present for their teacher, evenly splitting the \$$p$ cost among the 24 of them.</p> <p>How much money does Liam have left? <i>Write your answer as an expression.</i></p> <p>\$ <input type="text"/></p>
37.	<p>Solve for h.</p> $\frac{3}{7} = \frac{h}{14} - \frac{2}{7}$ <p><input type="text"/></p>
38.	<p>Jasmijn is a pet groomer. She charges n dollars to clip a dog's nails, w dollars to wash the dog, and h dollars to cut a dog's hair. Jasmijn will perform all three services for each of the 4 dogs she needs to groom this weekend.</p> <p>Which expressions can we use to describe how much Jasmijn will charge for grooming all 4 dogs?</p> <p>Choose 2 answers:</p> <p>_____</p> <p><input type="radio"/> (A) $4n + 4w + 4h$</p> <p>_____</p> <p><input type="radio"/> (B) $4n + w + h$</p> <p>_____</p> <p><input type="radio"/> (C) $4(n + h) + w$</p> <p>_____</p> <p><input type="radio"/> (D) $n + w + h + 4$</p> <p>_____</p> <p><input type="radio"/> (E) $4(n + w + h)$</p> <p>_____</p>



39.

Combine like terms to create an equivalent expression.
Enter coefficients as simplified proper or improper fractions or integers.

$$-\frac{1}{2}(-3y + 10)$$

40.

Olga tried to solve an equation step by step.

$$\frac{1}{4} \left(\frac{1}{3}k + 9 \right) = 6$$

$$\frac{1}{3}k + 9 = 24 \quad \text{Step 1}$$

$$\frac{1}{3}k = 15 \quad \text{Step 2}$$

$$k = 5 \quad \text{Step 3}$$

Find Olga's mistake.

Choose 1 answer:

(A) Step 1

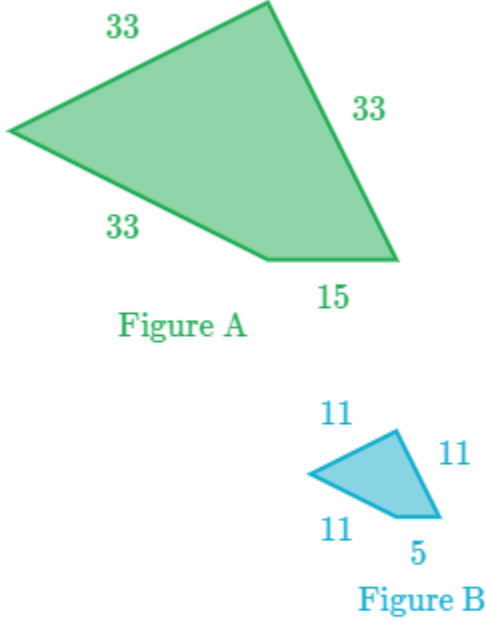
(B) Step 2

(C) Step 3

(D) Olga did not make a mistake.



Khan academy unit: Geometry

41.	<p>Polygon Y has an area of 11 square units. Celia drew a scaled version of Polygon Y using a scale factor of 3 and labeled it Polygon Z.</p> <p>What is the area of Polygon Z?</p> <input data-bbox="305 527 443 562" type="text"/>
42.	<p>Figure B is a scaled copy of Figure A.</p>  <p>Figure A</p> <p>Figure B</p> <p>What is the scale factor from Figure A to Figure B?</p> <input data-bbox="318 1724 477 1759" type="text"/>



***For some scholars, problems 43 - 48 may be new material. Try your best. It will be reviewed in class.

43.*	<p>Khan academy unit: solving equations with 1 unknown</p> <p>Solve for k. Give an exact answer.</p> $\frac{1}{4}k = 3 \left(-\frac{1}{4}k + 3 \right)$ <p>$k =$ <input type="text"/></p> <p>How many solutions does the following equation have?</p> $13(y + 3) = 13y + 39$ <p>Choose 1 answer:</p> <p><input type="radio"/> (A) No solutions</p> <p><input type="radio"/> (B) Exactly one solution</p> <p><input type="radio"/> (C) Infinitely many solutions</p>
44.*	<p>Khan academy unit: linear equations & functions</p> <p>Rearrange the equation so q is the independent variable.</p> $-7q + 12r = 3q - 4r$ <p>$r =$ <input type="text"/></p>



46.*

What is the slope of the line?

$$y + 5 = 2(x + 1)$$

Choose 1 answer:

(A) $\frac{1}{2}$

(B) $\frac{1}{5}$

(C) 2

(D) $\frac{2}{5}$

47.*

Determine the intercepts of the line.

Do not round your answers.

$$-4x + 7 = 2y - 3$$

y -intercept: (,)

x -intercept: (,)



48.*

Khan academy topic: Systems of equations

$$-x + 4y = -9$$

$$y = -2x + 6$$

Is $(2, 3)$ a solution of the system?

Choose 1 answer:

A Yes

B No
