

Summer Math 2023 Packet: Grade 8 Math

Dear Students and Parents,

This summer, we encourage you to continue to practice your mathematics at home. Practicing math skills over the summer can keep the brain's pathways for computation and mathematical vocabulary strong.

Please make sure to follow the suggested directions for the best outcomes:

1. **Do NOT use a calculator (unless specified).** Take time to "grow your brain" and practice your math facts.
2. **Show all work!** An important aspect of mathematics is being able to communicate the process you use to arrive at your answer. It also provides an opportunity to review your thinking when making corrections to your work.
3. **Be neat and organized!** Part of success in math is being able to organize your work and keep track of your calculations and steps. Use all the paper you need to neatly show your work.
4. **Box your final answers** (another organizational strategy).
5. **Do not rush!** Take advantage of the summer pace and see if you digest more of what you're working on.
6. **If you are stuck on a problem, read the example problems provided at the beginning of each exercise.** If you are still stuck, check out one of the math websites listed below.
7. **Check your work!** If you got an incorrect answer, go back and try to figure out your error. Correcting your work and figuring out where you went wrong is monumental in the learning process.

Resources:

For help with a topic: www.purplemath.com and select 7th grade on the left hand column, then select the topic from the top.

For Math Fact Practice: www.aplusmath.com and select flash cards. You can switch the operation and difficulty each time.

Another resource for help relearning a topic: www.khanacademy.org

Math Learning Games: www.funbrain.com

Another suggestion: If you or your child has a cellular phone, there are free math apps that you can play on and build math skills. There are many out there. Try one out!

Decimal Operations

1. $9.372 + 3.029$

2. $11.322 - 3.825$

3. $18.23 - 5.409 + 2.55$

4. $2.35 * 7.11$

5. $1.023 * 3.5$

6. $23.25 \div 0.7$

7. $0.54723 \div 2$

8. $8.752 \div 0.12$

For #9-12 simplify the fraction by finding common factors & eliminating them.

9. $\frac{4}{10}$

10. $\frac{24}{40}$

11. $\frac{81}{27}$

12. $\frac{9}{21}$

For #13-16, simplify each answer as much as possible by cross cancelling factors.

13. $\frac{4}{5} * \frac{10}{18}$

14. $\frac{8}{9} * \frac{3}{4} * \frac{10}{6} * \frac{12}{15}$

15. $\frac{27}{38} \div \frac{3}{7}$

16. $\frac{35}{38} \div \frac{5}{19}$

Order of Operations

Simplify each expression using PEMDAS!

1) $2 * 6 \div 4 + 7 - 8 * 3 + 77 \div 11$

4) $13 + 2x - 5 - 8x + 7 * (4x + 1)$

2) $72 \div 12 + 2^2 - 5 * 2 + 3 + 2 * (6 - 5)$

5) $-5x - 8 + (8 \div 2) + 7 * 6$

3) $7 * (12 - 5) + 9 \div (-3) + 7 * (-2)$

6) $3x - 6 + 4 * 8 - 3x + 2y - 90 \div 5$

Absolute Values & Negative Integer Operations

Simplify each statement as much as possible.

1. $|-4|$

2. $-|-5|$

3. $(-3)^2$

4. -5^3

5. $-4 * 5$

6. $-7 + 3$

7. $-8 * -7$

8. $-28 \div -7$

9. $-42 + 27$

10. $-22 - (-8)$

11. $\frac{-42}{7}$

12. $37 - 83$

13. $-42 \div 2 + (7 * 3) + 8 - (-5) - 4 * 2$

14. $|-2| + 8^2 - (-3)^2 + 7 * 2 - 22 \div 2$

15. $|-4^3| - 8 * 7 + (-(-(-2)) + \left(-\frac{48}{6}\right) + (-3) * (-2)$

Operations with Fractions

Reduce answers as much possible by finding common factors.

#1. $\frac{2}{5} + \frac{3}{7}$

#2. $\frac{4}{28} - \frac{7}{9}$

#3. $3\frac{1}{3} + 4\frac{7}{8}$

#4. $-\frac{7}{25} - \frac{8}{15}$

#5. $\frac{2}{25} * \frac{15}{22}$

#6. $\frac{27}{31} * -\frac{62}{81}$

#7. $-\frac{10}{21} * -\frac{49}{35}$

#8. $4\frac{1}{3} * 5\frac{2}{5}$

#9. $-\frac{42}{55} \div \frac{28}{11}$

#10. $\frac{25}{28} \div \frac{15}{32}$

#11. $-\frac{8}{5} \div \frac{6}{35}$

#12. $\frac{125}{128} \div \frac{65}{72}$

13. You have $8\frac{4}{5}$ total cups of lemonade, and you want to share it with your friends. Each friend gets $\frac{1}{10}$ of a cup to drink.
How many friends do you have?

14. You have $10\frac{2}{7}$ ounces of candle wax to make an army of tiny, beautiful-smelling candles. You are able to make a total of 12 candles from the wax. How much wax is in each candle? (Hint: write an equation first.)

Exponents & Expressions

For #1-4, rewrite as multiplication problems, then solve.

#1. $(-5)^4$

#2. $\left(\frac{1}{2}\right)^3$

#3. -4^2

#4. $\left(-\frac{2}{3}\right)^3$

For #5-7, rewrite as exponents, and solve.

#5. $2 * 2 * 2$

#6. $\left(\frac{1}{4} * \frac{1}{4}\right)$

#7. $-1 * -1 * -1 * -1 * -1 * -1 * -1$

Simplify the expression by combining terms.

#8. $-2(x - 3) + 4x$

#9. $4x - 1(6 + 2x)$

#10. $4x - 3 + 6z + 7 - 10x$

#11. $(6a + 3x) - (4a - 7x)$

#12. $(-4y - 8x) + (7y + 10x)$

#13. $(5x - 2a) - (-4x + 7a)$

#14. $(15x - 3y) + (-12x - y)$

Find the greatest common factor of the following terms.

#15. 84, 128

#16. $147x, 105x^2$

#17. 216, 288, 72

Solving Equations

Solve each equation for the variable.

#1. $2x + 6 = 8$

#2. $-4(x - 2) = 16$

#3. $\frac{x+7}{3} = 12$

#4. $\frac{5x-3}{2} = 11$

#5. $-3x - 7 = x + 9$

#6. $4(2x + 6) = 16x + 8$

#7. $2(x - 4) = 22$

#8. $-5x = 35$

#9. $\frac{x}{4} + 3 = 7$

#10. $-\frac{2x}{5} = 10$

#11. $-\frac{x-5}{2} = 11$

#12. $\frac{2x+1}{2} = 3x$

Factor out any common factors from each expression.

#13. $81x + 27$

#14. $3x - 9$

#15. $-48 - 64x$

Inequalities

For #1-2, write a sentence that represents the inequality.

#1. $x < 7$

#2. $x \geq -4$

For #3-4, tell if the given number makes the inequality TRUE or FALSE.

#3. $2x < 10$, value = -3

#4. $\frac{x+7}{6} \geq -5$, value = 5

Solve the inequalities, showing each step. Then graph the solutions.

#5. $x + 7 \leq -2$

#6. $\frac{3}{5}x > 9$

#7. $7 - 2x \geq 5$

#8. $-x - 8 < 3$

#9. $-\frac{5}{6}x \geq 15$

#10. $2x - 5 > 3x + 6$

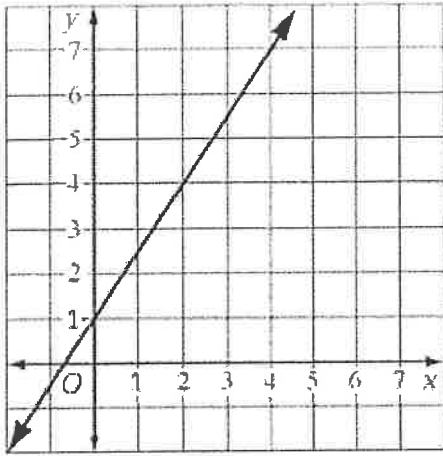
#11. $3x - 8 < 3x + 7$

#12. $3x + 7 > 4$

#13. $-2x + 7 < 9x - 2$

Coordinate Plane & Unit Rates

For #1-3, use the graph given to answer the questions.



#1. When $x = -2$, what is Y ?

#2. When $y = 4$, what is X ?

#3. When $x = 4$, what is Y ?

For #4-6, use the equation $y = -3x + 2$ to find the value of y at the given x values.

#4. $x = 3$

#5. $x = -\frac{5}{3}$

#6. $x = 0$

#7. $x = -4$

For #7-10, write the ratio as a fraction in its simplest form (reduce!).

#8. 56 to 77

#9. 144 to 84

#10. 15 to 45

#11. 36 : 108

Find the unit rate [by making the denominator 1].

#12. $\frac{28 \text{ megabytes}}{5 \text{ seconds}}$

#13. $\frac{45 \text{ cups of coffee}}{4 \text{ days}}$

#14. $\frac{28 \text{ detentions}}{9 \text{ days}}$

Decimals, Fractions, Percents

1. Write 0.42 as a fraction.
2. Write $\frac{7}{35}$ as a decimal.
3. Write 74% as a fraction.
4. Write 0.5732 as a percent.
5. Write $\frac{3}{11}$ as a percent.
6. Write $\frac{6}{25}$ as a percent.

For #7-12, turn the sentences into equations, and solve.

7. What number is 37% of 7?
8. 22% of 45 is what number?
9. 7 is 37% of what number?
10. What is 212% of 3?
11. 0.15% of 3,034 is what number?
12. 6 is 8% of what number?
13. A company makes a table for \$15 and sells it for \$19. What is the percentage of markup?

Mark-up and Discount:

- 1) The book originally sells for \$19.99 and is on sale 20% off. What is the selling price now?

- 2) The cookies sell for \$4.49 for 12 and they are on sale 12% off. What is their cost now?

- 3) A soccer coach wants to buy new soccer balls for his team. If they originally sell for \$65 and they are discounted to \$40, what is the markdown?

- 4) A box of markers is discounted 18% off. If the original price is \$5.99, what is the sale price?

- 5) Mark wants a pair of sneakers for basketball. His mom gave him \$50 to buy a pair. If the shoes originally cost \$100 and they were on sale 40% off, does he have enough money?

- 6) Staples sells a box of 12 notebooks for \$28.50. They are on sale 30% off. What is the cost now?

7) The original price of the sweater is \$55 and it is selling for \$24.50. What is the mark down percentage?

8) A pair of jeans costs \$89 and is on sale for 15% off. What is the price?

9) A winter jacket is on sale for 60% off at the end of the season. If the original price was \$210, what is the sale price?

10) A jean jacket costs \$40 and it is on sale for 75% off. What is the price?

Story:

You are trying to make enough money to buy the new Mortal Kombat game for your playstation. You charge \$7 per hour to babysit.

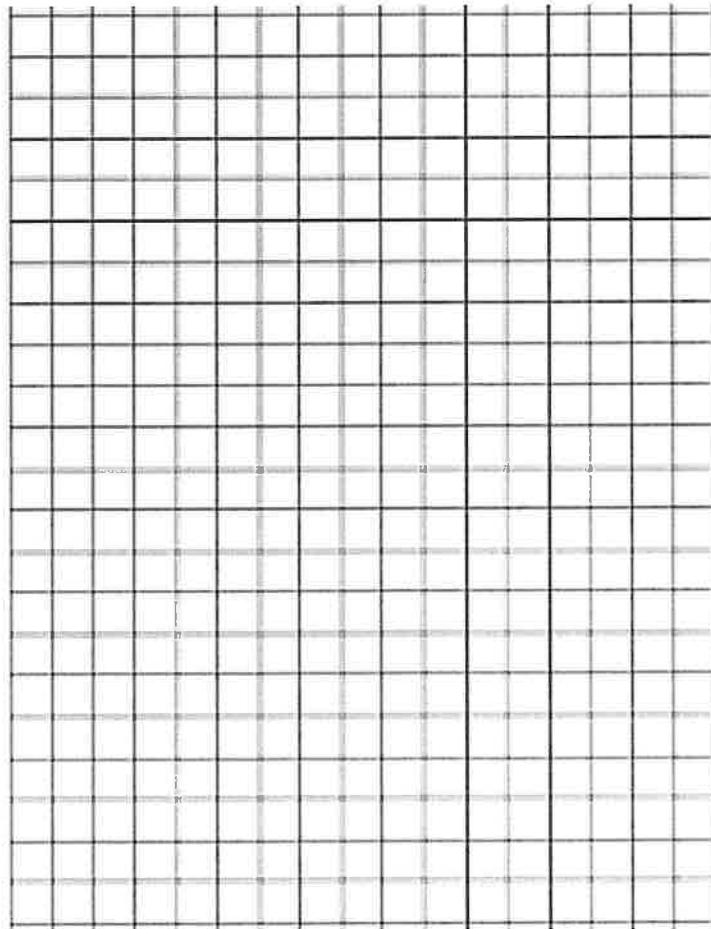
Table:

Number of Hours Babysitting	1	2	3	4	5	6
Money Made						

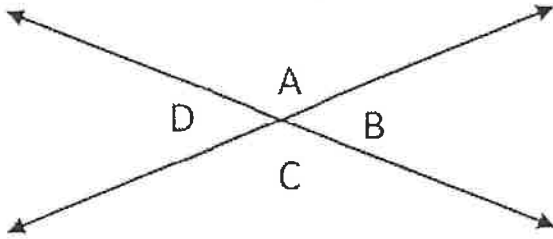
Constant of Proportionality:

Equation:

Graph:



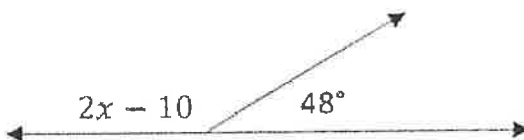
ANGLES



1. List the pairs of adjacent angles.
2. List the pairs of vertical (opposite) angles.

3. Angle Z and Angle X on intersecting lines are vertical angles. If Angle Z is 63° , what is Angle X?
4. Angle K and Angle J on intersecting lines are adjacent angles. If Angle K is 105° , what is angle J?
5. The total sum of complementary angles is _____.
6. The total sum of supplementary angles is _____.
7. Angle B and Angle C are complementary. If Angle B is 43° , what is Angle C?

8. Solve for x .



9. Solve for x .

