

Incoming 8th Graders

Math Review Packet SMS



This packet has been created to reinforce concepts learned throughout the school year. It is crucial the student complete this packet during summer break. Failure to do so will affect child's performance on the I-Ready AP1 (Diagnostic Test). Success in mathematics is through practice and fluency. Parents/Guardians we need your support in the growth of our student's academic success. Please follow the schedule provided for the students to complete packet. This packet includes an answer key to revise answers. Have an amazing summer!

Name: _____

Incoming Grade: _____

Math Incoming 8th Grade Summer Break Packet

DUE DATE: First Day of School 2021-2022

Expectations

- The guide below is for you to stay on top of your work over the break!
- Do NOT use a calculator!
- **Do Khan Academy:** <https://www.khanacademy.org/math/get-ready-for-8th-grade-regular> (regular)
- **Do Khan Academy:** <https://www.khanacademy.org/math/get-ready-for-geometry> (Algebra Students)

Suggested Date	Assignment	Study Habits Score			
<u>Week1</u> June 14-18	Adding and Subtracting Integers pg:3-4	1	0.5	0	
<u>Week2</u> June 21-25	Multiplying and Dividing pg:5-6	1	0.5	0	
<u>Week3</u> June-July 28-02	Fraction Operations pg:7-8	1	0.5	0	
<u>Week4</u> July 5-9	Order of Operations pg:9-10	1	0.5	0	
<u>Week5</u> July 12-16	Solving One-Step Equations pg:11-12	1	0.5	0	
<u>Week6</u> July 19-23	Solving Two-Step Equations pg:13-14	1	0.5	0	
<u>Week7</u> July 26-30	Area and Perimeter pg:15-16	1	0.5	0	
<u>Week8</u> August 02-06	Fraction-Decimal-Percent Conversions pg:17-18 Proportions pg:19	3	2	1	0
<u>Week9</u> August 09-13	Word Problems pg:20-22	3	2	1	0
<u>Week10</u> August 16-20	Student Evaluation pg:23 Parent Evaluation pg:24	Total Habits Score: _____/20			

*ESOL Estudiantes pueden usar Khan Academy en espanol.

<https://es.khanacademy.org/math/get-ready-for-8th-grade>

TOPIC ONE: ADDING AND SUBTRACTING INTEGERS

Instructions: Find the Sum or Difference **without using a calculator**. Calculators will not be allowed on the assessment in September. If you do your work on a separate sheet of paper, please staple that sheet to this worksheet.

1. $9 + -4$	2. $-1 + -6$
3. $2 + -6$	4. $-14 + -7$
5. $5 + -10$	6. $13 - 12$
7. $12 + -4$	8. $-14 + 22$
9. $-45 + -67$	10. $-13 + -4$
11. $35 + -53$	12. $15 + -8$

13. $7 + -7$	14. $9 - (-1)$
15. $5 - 8$	16. $-10 - (-8)$
17. $11 - (-25)$	18. $6 - 9$
19. $-28 - (-28)$	20. $-16 - (-2)$
21. $27 - 52$	22. $19 - (-12)$
23. $10 - (-14)$	24. $-36 - 29$
25. $42 + - 65$	26. $- 27 + 52$

TOPIC TWO: MULTIPLYING AND DIVIDING INTEGERS

Review:

To multiply and divide two integers, multiply or divide the numbers then decide the sign:

- If the signs are the same, the product is positive
- If the signs are different, the product is negative

Instructions: Find the product or quotient **without using a calculator**. Calculators will not be allowed on the assessment in the fall. If you do work on a separate sheet of paper, please staple that sheet to this worksheet.

1. $-3 \cdot 6$	2. $-6 \cdot (-9)$
3. $-50 \div 5$	4. $-32 \div 4$
5. $-7 \cdot 0$	6. $-18 \div (-6)$
7. $6 \cdot (-7)$	8. $-45 \div 9$

9. $-3 \cdot (-4)$	10. $-5 \cdot 2$
11. $-12 \div (-3)$	12. $14 \div (-7)$
13. $600 \div (-30)$	14. $3 \cdot (-15)$
15. $-2 \cdot (-8)$	16. $-0.4 \div (-1)$
17. $-28 \div (-7)$	18. $-7 \cdot 2 \cdot (-3)$
19. $-8 \cdot (-80)$	20. $-6 \cdot \frac{1}{3}$

TOPIC THREE: FRACTION OPERATIONS

Review:

Addition or Subtraction

1. Find the least common denominator (LCD)
2. Write each fraction with the common denominator
3. Add or subtract the numerators, keep the denominator
4. Simplify your answer if possible

Add $\frac{1}{3} + \frac{3}{7}$.

The least common denominator is 21.

$$\begin{aligned}\frac{1}{3} + \frac{3}{7} &= \frac{1 \cdot 7}{3 \cdot 7} + \frac{3 \cdot 3}{7 \cdot 3} \\ &= \frac{7}{21} + \frac{9}{21} \\ &= \frac{16}{21}\end{aligned}$$

Multiplication

1. Multiply the numerators
2. Multiply the denominators
3. Simplify your answer if possible

Multiply $\frac{1}{4} \cdot \frac{5}{6}$.

$$\begin{aligned}\frac{1}{4} \cdot \frac{5}{6} &= \frac{1 \cdot 5}{4 \cdot 6} \\ &= \frac{5}{24}\end{aligned}$$

Division

1. Multiply by the reciprocal of the second fraction
2. Simplify your answer if possible

Divide $\frac{3}{4} \div \frac{5}{7}$.

$$\begin{aligned}\frac{3}{4} \div \frac{5}{7} &= \frac{3}{4} \cdot \frac{7}{5} \\ &= \frac{3 \cdot 7}{4 \cdot 5} \\ &= \frac{21}{20}\end{aligned}$$

Instructions: Simplify the following fractions.

1. $\frac{12}{45}$	2. $\frac{20}{15}$
3. $\frac{42}{64}$	4. $\frac{25}{80}$
5. $\frac{15}{75}$	6. $\frac{60}{24}$
7. $\frac{32}{12}$	8. $\frac{18}{51}$

Instructions: Perform the indicated operation. Write your answer as a fraction or improper fraction in simplest form. Show all work. If you do work on a separate sheet of paper, please staple that sheet to this worksheet.

1. $\frac{6}{7} - \frac{1}{2}$	2. $\frac{15}{4} + \frac{9}{5}$
3. $\frac{2}{5} - \frac{1}{3}$	4. $5\frac{1}{10} - 2\frac{1}{3}$
5. $\frac{3}{5} \cdot \frac{5}{8}$	6. $4\frac{1}{4} \cdot 1\frac{2}{3}$
7. $\frac{2}{3} \div \frac{4}{7}$	8. $(4\frac{1}{3} - 2\frac{3}{4}) \cdot 1\frac{1}{2}$

TOPIC FOUR: ORDER OF OPERATIONS

Review:

When you have an expression that contains several operations, you use the order of operations to know which operation must be completed first.

- P Parentheses
- E Exponents/Square Roots
- MD Multiplication and Division (from left to right)
- AS Addition and Subtraction (from left to right)

Example:

$$\begin{aligned}8 \div (3 + -5)^2 &= \\8 \div (-2)^2 &= \\8 \div 4 &= \\4 &\end{aligned}$$

Instructions: Show all work. Do not use a calculator. If you do work on a separate sheet of paper, please staple that sheet to this worksheet.

1. $8 \div 3^4$	2. $800 \div 2^4 + 50$
3. $6(7^2 - 2^3)$	4. $5^3 + 56 \div 7$
5. $(26 - 17)^2 + 35$	6. $80 \div (20 \div 10)^2$

7. $(5 \cdot 3)^2 - 75$	8. $-15 + 4^3$
9. $-9^2 - (-30)$	10. $3^4 + 40 - (5 - 3)^2$
11. $12^1 \cdot 30 - 8^2$	12. $6^2 - 50 \cdot 3^2$
13. $(14 + 5^2) \cdot 0$	14. $23 + (9 - 14)^2$
15. $(14 - 16)^3 + 10$	16. $-4 \cdot (2 - 8)^2$
17. $(-7 - 8)^2 \cdot 20$	18. $-15 \div 3 \cdot (-12)$

TOPIC FIVE: SOLVING ONE-STEP EQUATIONS

Review:

There are five types of one-step equations that we have learned to solve. In all cases, the goal is to “undo” whatever operation has been performed in order to isolate the variable.

Addition equations: To solve, we subtract from both sides what was added to x.

$$\begin{array}{r} x + 7 = -12 \\ -7 \quad -7 \\ \hline x = -19 \end{array}$$

Subtraction equations: To solve, we add to both sides what was subtracted from x.

$$\begin{array}{r} x - 8 = 10 \\ +8 \quad +8 \\ \hline x = 18 \end{array}$$

Multiplication equations: To solve, divide both sides by what multiplied x.

$$\begin{array}{r} \underline{5x} = \underline{-25} \\ \underline{5} \quad \underline{5} \\ \hline x = -5 \end{array}$$

Division equations: To solve, multiply both sides by what divided x.

$$\begin{array}{r} 3 \cdot \frac{x}{3} = -7 \cdot 3 \\ \hline x = -21 \end{array}$$

Fractional equations: To solve, multiply both sides by the reciprocal of the fraction that multiplies x.

$$\begin{array}{r} \frac{3}{2} \cdot \frac{2}{3} x = 16 \cdot \frac{3}{2} \\ \hline x = \frac{48}{2} \\ \hline x = 24 \end{array}$$

Instructions: Solve each equation by undoing what has been done to the variable.

1. $b + 15 = 8$	2. $\frac{d}{5} = -10$
3. $z - 20 = 32$	4. $6p = -30$
5. $-8 = 12 + q$	6. $\frac{h}{4} = -7$
7. $-49 = -7x$	8. $t - 9 = -19$
9. $\frac{3}{4}x = -6$	10. $5 = \frac{5}{6}x$

TOPIC SIX: TWO-STEP EQUATIONS

Review:

The goal of solving two- step equations is to isolate the variable on one side of the equal sign. To do this you first need to undo addition or subtraction, and then undo multiplication or division.

Solve each equation. Then check your solution.

Example:

$$3x + 1 = 10$$

$$\begin{array}{r} -1 \\ -1 \end{array} \quad (subtract\ 1\ from\ both\ sides)$$

$$\underline{3x} = \underline{9} \quad (re-write\ new\ equation)$$

$$\begin{array}{r} 3 \\ 3 \end{array} \quad (to\ isolate\ x,\ divide\ both\ sides\ by\ 3)$$

$$x = 3$$

To check the solution, substitute the value of x into the original equation.

When $x = 3$,

$$3(3) + 1 = 10$$

$$9 + 1 = 10$$

$$10 = 10 \checkmark$$

Your answer is correct when both sides of the equation equal each other.

Instructions: Solve each equations. Then check your solution by substituting it into the original equation (*like the example above*).

1. $-8 + 2t = 4$	2. $-3 - 5n = -1$
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3. $7 = -2 + 3b$	4. $2x + 8 = -6$
5. $-15 - 3v = 6$	6. $16 = 4s - 8$
7. $-2 = 10d - 3$	8. $\frac{h}{-3} - 6 = 8$
9. $9 - \frac{m}{4} = -12$	10. $\frac{k}{5} + 11 = -4$

TOPIC SEVEN: AREA AND PERIMETER

Review: The **perimeter** of a shape is the sum of the lengths of its sides. To find the perimeter, add the lengths of the figure's sides. Remember to always write units - your answer should never be just a number.

The **area** of a shape is the amount of space it takes up. Use the formula sheet included in this review packet to help you.

Instructions:

1. Draw each figure.
2. Find the perimeter of the figure. Show all work.
3. Find the area of the figure. Show all work.

1. Rectangle with length of 8 cm and width 6 cm		
Drawing:	Perimeter:	Area:
2. A parallelogram with base 12 inches and height 7 inches		
Drawing:	Perimeter:	Area:

3. A square with side length 14 m		
Drawing:	Perimeter:	Area:
4. A triangle with base 16 cm and height 9 cm		
Drawing:	Perimeter:	Area:
5. A trapezoid with one base of 3 feet, another base of 8 feet, and a height of 6 feet		
Drawing:	Perimeter:	Area:

TOPIC EIGHT: FRACTION - DECIMAL - PERCENT CONVERSIONS

By the beginning of 8th grade you will need to be proficient in calculating converting between percents, decimals, and fractions.

Review:

A percent is a fraction with a denominator of 100. For example 35% is the same as $\frac{35}{100}$, which is also the same as 0.35.

To convert a decimal into a percent, multiply it by 100.

$$0.64 \rightarrow 0.64(100) = 64\%$$

$$1.05 \rightarrow 1.05(100) = 105\%$$

$$0.05 \rightarrow 0.05(100) = 5\%$$

To convert a percent into a decimal, divide it by 100.

$$64\% \rightarrow 64 \div 100 = 0.64$$

$$105\% \rightarrow 105 \div 100 = 1.05$$

$$5\% \rightarrow 5 \div 100 = 0.05$$

To convert a fraction into a percent, convert the fraction to a decimal by dividing the numerator by the denominator. Then multiply the decimal by 100 to convert into a percent.

$$\frac{1}{4} \rightarrow 1 \div 4 = 0.25$$

$$0.25 \cdot 100 = 25\%$$

Convert the fraction into a decimal

Then convert the decimal into a percent

To convert a percent into a fraction, convert the percent into a decimal. Then make the decimal into a fraction in simplest form (reduced fraction).

$$50\% \rightarrow 50 \div 100 = 0.5$$

$$0.5 \rightarrow \frac{50}{100} \rightarrow \frac{50 \div 50}{100 \div 50} = \frac{1}{2}$$

Convert the percent into a decimal

Then convert the decimal into a fraction

(reduce the fraction into simplest form by dividing both the numerator and the denominator by the same number, in this case 50)

Instruction:

Write each decimal as a percent and as a fraction reduced in simplest form.

1. 0.36	2. 0.003
3. 0.04	4. 5.2

Write each fraction as a decimal and as a percent. *Use a calculator to help with division if needed.*

1. $\frac{3}{5}$	2. $\frac{1}{6}$
3. $\frac{17}{20}$	4. $\frac{25}{8}$

Write each percent as a decimal and as a fraction reduced to simplest form.

1. 70%	2. 9.3%
3. 782%	4. 0.45%

TOPIC NINE: PROPORTIONS

Instructions: Solve each proportions to find the value of the variable.

1. $\frac{10}{8} = \frac{f}{10}$	2. $\frac{7}{3} = \frac{n}{6}$
3. $\frac{9}{6} = \frac{k}{10}$	4. $\frac{7}{t} = \frac{8}{7}$
5. $\frac{4}{3} = \frac{8}{s}$	6. $\frac{a}{9} = \frac{4}{6}$

TOPIC TEN: WORD PROBLEMS

Instruction: For these problems, please show your work when necessary. They are an assortment of challenge questions, logic puzzles, and open response questions.

1. There were 6 pizza pies at the summer barbeque at Abby's House. She shares the pizza with her 7 friends. If all 8 people get the same amount of pizza, what portion of pizza can each person have? *Use pictures, diagrams, or math operations to show your work.*

2. The class decides to make chocolate chip cookies for Mr. Burn's first day of school in September. Each student needs $\frac{3}{4}$ of a stick of butter for the recipe. If 14 students want to make cookies, how many sticks of butter do they need to buy? *Use pictures, diagrams, or math operations to show your work.*

3. Steven's family recipe for macaroni and cheese makes 4 servings at 310 calories each. Steven decided to make $1\frac{1}{2}$ times the original recipe. How many calories are in Steven's batch of macaroni and cheese?

4. Tabatha is dining out at Mande's and decides to get an order of curly fries, chicken fingers, and a coca-cola. The total cost of the food with sales tax came to \$18.64. If Tabatha decides to give the cashier a 20% gratuity (tip), what does her total bill come to?

5. Arlene has $\frac{1}{5}$ as many goldfish as Isabelle. Isabelle has 5 times as many goldfish as Bruce. If Bruce has 18 goldfish, how many goldfish does Arlene have?

6. Meaghan started a baking service. During her first month in business, Meaghan spent \$380 on supplies and drove 800 miles at an average cost of \$0.30 per mile. In addition, her business phone and other expenses were \$198. That month, Meaghan completed 60 jobs, earning \$50 per job. What was Meaghan's **profit** during her first month in business? *Show all your work*

(profit is your expenses subtracted from the amount of money you earn)

7. Denny and Brendan decide to start a paper delivery business to make money over the summer. *Use tables, graphs, or equations to help you solve.*

a. Denny can deliver 6 papers every 15 minutes and Brendan can deliver 5 papers in that same amount of time. How many papers can they deliver in an hour?

b. In Salem, 90 homes receive papers each day. When would Brendan and Denny need to wake up to deliver all their papers by 8am?

Parents Evaluation/Reflection Form

1. How difficult did you feel this summer math challenge was for your student? Was it too easy or too difficult or somewhere in the middle?

(¿Qué tan difícil le pareció que este desafío de matemáticas de verano fue para su estudiante? ¿Fue demasiado fácil o demasiado difícil o en algún lugar en el medio?)

2. How much help did you give your son or daughter in completing this challenge?

(¿Cuánta ayuda le dio a su hijo o hija para completar este desafío?)

3. What would you say was the most difficult thing about the summer math challenge? (¿Qué

dirías que fue lo más difícil del desafío matemático de verano?)

Student Name: _____ Preferred Name: _____

Parent/Guardian(s) names: _____

Parent/Guardian(s) emails: _____

Parent/Guardian(s) phone numbers: _____

Student and Parent/Guardian Declaration

I have completed this packet to the best of my ability. I am prepared to turn it in on

the first day of the 2021-2022 school year!