TIMOTHY
CHRISTIAN SCHOOL

Entering 8th Grade Intro to Algebra Summer Packet 2022

Please complete every problem and SHOW ALL WORK. No Work = No Credit. You may use a calculator on sections 4-10 but you still must show your work. Write your final answers on the answer sheet at the end of the packet. This assignment will be graded for both accuracy (75%) and completion (25%). The summer math packet is due on the first day you return to school. This packet will count as a test grade in the first marking period of the new school year.

This Packet has been designed to give a review of General Math skills that are essential for student success in Pre-Algebra or Intro to Algebra. The packet should be completed over the course of the summer and not in the last week before the new school year begins.

Suggested timeline for completing this packet.

Week of July 4 – Exercises #1

Week of July 11 – Exercises #2

Week of July 18 –Exercises #3

Week of July 25 – Exercises #4, #5

Week of August 1 – Exercises #6, #7

Week of August 8 – Exercises #8

Week of August 15 – Exercises #9

Week of August 22 – Exercises #10

Exercise 1: Order of Operations

Evaluate each expression

1	$(6-4) \times 49 \div 7$	2	$7 + 10 \times 2$
3	$6(2+3)$	4	$9 - 32 \div 4$
5	$3(5 \cdot 9 + 5) \cdot 4$	6	$(13-4) \cdot (14+3$
7	$(14-8) \div (4-2) + 7$	8	$3 \cdot (10 \cdot 2) \div 5$
9	$4 + (3-3)$	10	$10 - 12 \div 4 - 4$
11	$(1+5)(8-1)$	12	$8(5 \cdot 3 - 9)$
13	$(15-9) \div (9-3)$	14	$(4^2 - 2) \cdot 7$

Exercise 2: Multiplying and Dividing Positive and Negative Numbers

- Two integers with DIFFERENT signs, the answer is NEGATIVE
- Two integers with SAME signs, the answer is POSITIVE

1	$48 \div 6$	2	$-85 \div (-17)$
3	$9(-7)$	4	$9 * 10$
5	$12 \div (-3)$	6	$-180 \div 15$
7	$3(7)$	8	$7 \cdot (-2)$
9	$-6 \cdot 0$	10	$-122 \cdot (-1)$
11	$7(-7)$	12	$-5 \div (-1)$
13	$56 \div (-7)$	14	$-5 \cdot (-4)$
15	$-(-92)$	16	$63 \div -9$
17	$14 \cdot -2 \div -7$	18	$-4 \div -2 \cdot 5$
19	$-72 \div 9 \div 2$	20	$100 \div -25 \times 2$

Exercise 3: Adding and Subtracting Integers

ADDITION INTEGER RULES:

For integers with the same sign:
- The sum of two positive integers is POSITIVE
- The sum of two negative integers is NEGATIVE

For integers with different signs, subtract their absolute value. The sum is:
- Positive IF the positive integer has the greater absolute value.
- Negative IF the negative inters has the greater absolute value.

SUBTRACTION INTEGER RULES:
- Keep the first number the same
- Switch the subtraction sign to ADDITION
- Change the second number to its opposite.
- Follow Addition rules above.

1	$3 - 8$	2	$(-8) - (-2)$
3	$5 + 9$	4	$(-27) - 24$
5	$(-7) + 9$	6	$-4 + (-12)$
7	$2 - 10$	8	$-5 + 10$
9	$-7 + (-5)$	10	$-6 + 10$
11	$-12 + 7$	12	$(-10) + (-7)$

13	$3 + 4$	14	$(-30) + 10$
15	$2 - (-2)$	16	$(-8) - (-6)$
17	$-1 - 10$	18	$8 - 7$
19	$(-10) - 47$	20	$(-12) + (-11)$

Exercise 4: One-Step Equations with Integers

Reminder: equations must always remain balanced.
- If you add or subtract the same number from each side of an equation, the two sides remain equal.
- If you multiply or divide the same number from each side of an equation, the two sides remain equal.

Example:
$$t + 15 = 60$$
$$-15 \quad -15$$
$$t \quad\ = 45$$

think: What operation is happening to t?
addition — to undo you must subtract 15 from both sides.
Goal: Get the variable alone

1	$-40 = -5p$	2	$\dfrac{x}{5} = 2$
3	$-19 = b - 6$	4	$\dfrac{x}{2} = 11$

5	$k + 1 = -27$	6	$n - 4.7 = -4.7$
7	$x - 4 = 1$	8	$y + 3 = 9$
9	$3g = 15$	10	$\dfrac{r}{2} = 9$
11	$x + 5 = 6$	12	$4v = 20$
13	$\dfrac{h}{5} = 1$	14	$x - 17 = 38$
15	$t + 8 = 16$	16	$7w = 14$

Exercise 5: Fraction Practice

- To add or subtract unlike fractions, rename the fractions so there is a common denominator. Then simplify.
- To multiply fractions, multiply the numerators and multiply the denominators. Then simplify.
- To divide fractions, Keep the first fraction, Flip the second fraction, Change the sign to a multiplication sign. (KFC) or remember "When I divide fractions, I don't cry – I flip the second and multiply" Then simplify.

1	$\frac{1}{3}+\frac{1}{9}$	2	$\frac{5}{7}+\frac{9}{7}$
3	$\frac{9}{10}-\frac{1}{10}$	4	$\frac{2}{3}-\frac{1}{6}$
5	$\frac{4}{5}\cdot\frac{5}{4}$	6	$\frac{10}{50}\cdot\frac{2}{1}$
7	$\frac{1}{3}\div\frac{6}{2}$	8	$\frac{4}{7}\div\frac{1}{2}$
9	$\frac{15}{30}\cdot\frac{2}{1}$	10	$\frac{2}{7}+\frac{4}{14}$
11	$\frac{6}{9}-\frac{10}{18}$	12	$\frac{5}{6}\cdot\frac{4}{3}$

Exercise 6: Central Tendencies

Median
- To find the median, line the data from least to greatest
- Eliminate the "highest" and "lowest" number until you are left if one or two data entries in the middle.
- If you are left with two data entries, find the average of the two.

Mean
- Find the sum of all data entries, divide by the number of data entries

Mode
- The number that occurs most often

Bill scored $100\%, 100\%, 90\%, 70\%$ and 60% on five quizzes. Find the mean, median, and mode.

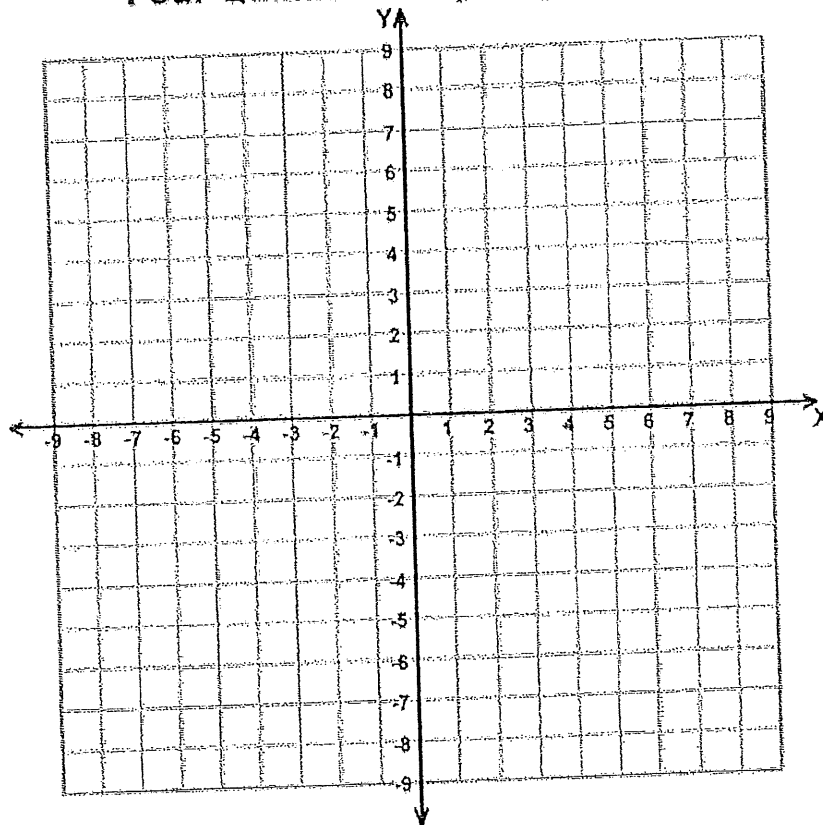Mean: Median:

Mode:

Which makes his grade look the highest, the mean, the median or the mode?

Which measure should his teacher use to convince Bill to study harder?

Four Quadrant Graphing Puzzle

Connect each sequence of points with a line.

(-1,1) , (-1,2) , (0,3) , (-2,5) , (-1,6) , (-2,7) , (-1,9)

(-4,7) , (-5,3) , (-6,2) , (-2,1) , (-1,1) End of Sequence

(-1,-1) , (-2,-1) , (-6,-2) , (-5,-3) , (-4,-7) , (-1,-9) , (-2,-7)

(-1,-6) , (-2,-5) , (0,-3) , (-1,-2) , (-1,-1) End of Sequence

(-5,0) , (-4,-1) , (0,-1) , (2,-2) , (4,-2) , (2,0) , (4,2)

(2,2) , (0,1) , (-4,1) , (-5,0) End of Sequence

(-4,-1) , (-6,-1) , (-5,0) , (-6,1) , (-4,1) End of Sequence

(5,-3) , (4,-2) , (5,-2) End of Sequence

(5,3) , (4,2) , (5,2) End of Sequence

(-4,.5) End of Sequence

(-4,-.5) End of Sequence

What is the shape ? ***No need to recopy onto the answer key.

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Exercise 8: Converting Numbers

Fraction to Decimal to Percent Chart

Fraction in simplest form	Decimal	Percent
$\dfrac{1}{10}$		
		20%
	0.25	
$\dfrac{3}{10}$		
	0.4	
		50%
$\dfrac{3}{5}$		
2		
		80%
	0.90	
$\dfrac{1}{1}$		

Exercise 9: Order from Least to Greatest

- Change all numbers to the same form (all fraction, decimals or percents)
- Compare and order, if they are the same value write =
- Write using the ORIGINAL form.

1	$\frac{2}{6}$ and 0.258	2	$\frac{1}{10}$ and -0.025	3	$\frac{4}{8}$ and 0.625
4	$\frac{4}{5}$ and 0.8	5	$\frac{2}{4}$ and 0.8	6	$-\frac{6}{8}$ and -0.75
7	$-\frac{4}{7}$ and -0.571	8	$\frac{3}{5}$ and 0.6	9	$-\frac{1}{10}$ and -0.2
10	$\frac{4}{6}$ and 0.742	11	$\frac{3}{8}$ and 0.375	12	$-\frac{2}{3}$ and -0.742
13	$-\frac{1}{2}$ and -0.45	14	$-\frac{2}{3}$ and -0.275	15	$\frac{1}{2}$ and 0.5
16	$-\frac{2}{4}$ and -0.525	17	$-\frac{3}{4}$ and $\frac{3}{4}$	18	$\frac{1}{3}$ and 0.283
19	$\frac{5}{6}, \frac{1}{2}$ and 0.858	20	$\frac{4}{8}, 1, 0.625$	21	$-1, 42, -57$

Exercise 10: Least Common Multiple and Greatest Common Factor

Least Common Multiple
- Write the multiples of all numbers shown
- Choose the SMALLEST multiple that all numbers have in common, that is your LCM

Greatest Common Factor
- Factor all numbers until the factors are prime
- Multiply the factors all numbers have in common
- The product of the prime factors is the GCF

LCM

1	49, 84	2	69, 12
3	6, 72	4	14, 25
5	84, 40	6	54, 16
7	9, 23	8	15, 90
9	36, 24	10	8, 54

GCF

1	35, 45	2	78, 52
3	24, 84	4	80, 60
5	77, 11	6	36, 90
7	81, 63	8	55, 75
9	39, 42	10	90, 60

Answer Sheet

Exercises #1

1.	2.	3.	4.
5.	6.	7.	8.
9.	10.	11.	12.
13.	14.		

Exercises #2

1.	2.	3.	4.
5.	6.	7.	8.
9.	10.	11.	12.
13.	14.	15.	16.
17.	18.	19.	20.

Exercises #3

1.	2.	3.	4.
5.	6.	7.	8.
9.	10.	11.	12.
13.	14.	15.	16.
17.	18.	19.	20.

Exercises #4

1.	2.	3.	4.
5.	6.	7.	8.
9.	10.	11.	12.
13.	14.	15.	16.

Exercises #5

1.	2.	3.	4.
5.	6.	7.	8.
9.	10.	11.	12.

Exercises #6

Mean: Median: Mode:

Which makes his grade look the highest, the mean, the median or the mode?

Which measure should his teacher use to convince Bill to study harder?

Exercises #8

Fraction in simplest form	Decimal	Percent
$\dfrac{1}{10}$		
		20%
	0.25	
$\dfrac{3}{10}$		
	0.4	
		50%
$\dfrac{3}{5}$		
2		
		80%
	0.90	
$\dfrac{1}{1}$		

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Exercises #9

1.	2.	3.	4.
5.	6.	7.	8.
9.	10.	11.	12.
13.	14.	15.	16.
17.	18.	19.	20.
21.			

Exercises #10

LCM

1.	2.	3.	4.	5.
6.	7.	8.	9.	10.

GCF

1.	2.	3.	4.	5.
6.	7.	8.	9.	10.