John P. Freeman Optional School

2023 Summer
7th Grade Packet

Student Name _____

(Please be sure to write your initials on the line at the bottom of each page.
This packet contains math concepts that may or may not have been taught in your previous classes but are important for 7th grade. Students enrolled in 7th grade Pre-Algebra for the 2023-2024 school year are expected to submit a completed packet during the first week of school (August 7-11). Exact due dates/procedures will be discussed on August 7th.

7th Grade Summer Math Packet Instructions

Student Name _____

1. This packet has 6 sections, and it is recommended that students work on one section each week during the summer. It is NOT recommended to complete this packet immediately following school dismissal nor the night before the packet is due. Student learning is most effective if the packet is worked on throughout the summer at a steady pace.

2. You should complete the problems **WITHOUT** a calculator, and you MUST **SHOW ALL YOUR WORK.** Use additional paper is needed. No credit will be provided if your work is not shown.

3. After completing a section, rate your understanding of each week's topic by circling the image in the chart below.
   - **Smiley face** – You understand ALL the concepts for that week and would be able to teach it to another student.
   - **Neutral face** – You understand the concepts for the most part
   - **Confused face** – You do not understand these concepts and need help reviewing.

WEEK	MATH TOPIC	MY RATING
1	Integer Operations	😊 😐 ☹️
2	Order of Operations	😊 😐 ☹️
3	Equivalent Fractions & Equivalent Ratios	😊 😐 ☹️
4	Solving Equations	😊 😐 ☹️

5	Converting fractions to decimals	🙂 😐 🙁
6	Mixed Review	🙂 😐 🙁

What do I do if I don't understand something?

- Use your resources (online help sites, Khan Academy, videos, parents, siblings, etc.)
- You may use the reference links in this packet to help you.
- Make a note of the topic/question on the rating chart and ask your teacher to review it during the first week of school.

What happens next?

- Concepts will be reviewed and discussed during the first week of school.
- Students will receive both a participation grade and an assessment grade, based on the packet completion.   (Your teacher will discuss this with you August 7, 2023.)

We are excited about working with all the students entering 7th grade in 2023-2024. We want all students to feel prepared, confident, and successful for all the important new concepts they will learn next year.

Rising 7th Grader RESOURCES

WEEK	MATH TOPIC	VIDEO & TUTORIAL LINKS
1	Integer Operations	• https://youtu.be/NQSN00zL5gg • https://www.youtube.com/watch?v=0hEQL3F5mc8
2	Order of Operations	• https://youtu.be/gjrGd9TjjnY • https://www.youtube.com/watch?v=dXvvGc9TldY • http://www.mathgames.com/skill/6.149-order-of-operations
3	Equivalent Fractions & Equivalent Ratios	• http://www.mathgames.com/skill/3.44-make-equivalent-fractions • https://youtu.be/U2ovEuEUxXQ
4	Solving Equations	• https://youtu.be/jWpiMu5LNdg • https://youtu.be/VidnbCEOGdg • https://www.youtube.com/watch?v=BmNzjXzH74g
5	Converting fractions to decimals	• https://youtu.be/Y1V5mZaMfTk • https://www.youtube.com/watch?v=do_IbHId2Os
6	Mixed Review	• https://youtu.be/CTKMK1ZGLuk • https://youtu.be/m-pRnFIeoNA • https://youtu.be/tnkPY4UqJ44 • https://youtu.be/tj5AtYoKqvs • https://youtu.be/Jeh5vudjmLI

Week 1: Integer Operations

Addition	Subtraction	Multiplication	Division
When addends have the same sign, add. Use that sign when you write the sum: 5 + 8 = 13 -2 + -5 = -7 When addends have different signs, subtract. Use the sign of the greater addend: -6 + 4 = -2 45 + -10 = 35	To subtract an integer, add its opposite: *The opposite of 12 is -12 4 — 12 = 4 + -12 = -8 ■ 9 — -12 = 9 + 12 = 21 *The opposite of 15 is -15 1 — -15 = 1 + 15 = 16 -20 — -15 = -20 + 15 = -5	When factors have the same sign, the product is positive: 5 · 6 = 30 -13 · -3 = 39 When the factors have different signs, the product is negative: -6 · 8 = -48 9 · -11 = -99	When the dividend and the divisor have the same sign, the quotient is positive: 45 ÷ 5 = 9 -120 ÷ -6 = 20 When the dividend and the divisor have different signs the quotient is negative: 35 ÷ -5 = -7 -250 ÷ 10 = -25

Solve:

1. $-2 + (+3) =$

2. $-3(-4) =$

3. $45 - (-27) =$

4. $-5 + (+4) =$

5. $24 \div (-6) =$

6. $19(-4) =$

7. $5 - (-3) =$

8. $5(-18) =$

8. $-42 \div (-6) =$

9. $-7 - (-3) =$

10. $-8 \div (-4) =$

11. $-21 + -19 =$

12. $-14 - 6 =$

13. $17(-4) =$

14. $32 \div (-4) =$

15. $6 + (-8) =$

16. $81 \div (-9) =$

17. $14 - (-7) + (-2) =$

18. $93 - -21 =$

19. $-7 + 2 =$

20. $-21 \div (-7) =$

5

21. $-3 * -6$ 22. $15 * -3$
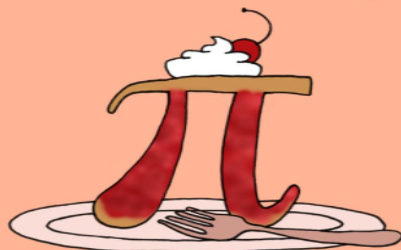
23. $-4 * 9$ 24. $-3 * -5 * -6$

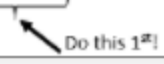25. $-24 \div -3$ 26. $40 \div -8$

27. $10 * -9$ 28. $-98 \div 7$

Why shouldn't you let advanced math intimidate you?

It's really as easy as *pi*!

Week 2: Order of Operations

Order of Operations

1st	**Grouping Symbols**	$\frac{4+2}{8\cdot7} = \frac{(4+2)}{(8\cdot7)}$ $\sqrt{50-1}$ $50 - [3 \cdot (15-5)] + 23$ Do this 1st!	**Grouping** Symbols include: $(\,)$, $\{\,\}$, $[\,]$, $|\ \ |$ ←absolute value bars. In addition, complete all operations **grouped** by the <u>numerator</u> or <u>denominator</u> in a fraction & operations located underneath a <u>radical symbol</u>.
2nd	**Radicals & Exponents**	3^2 $3^{\frac{1}{2}}$ $\sqrt{3}$ $\sqrt[4]{81}$	Rational Exponents & Roots are included
3rd	**Division & Multiplication**	$30 \div 2 \cdot 5 = 75$ versus $30 \cdot 2 \div 5 = 12$	Calculate Left to Right
4th	**Subtraction & Addition**	$-2 + 6 - 8 = -4$	Calculate Left to Right

Use the order of operations to solve the following problems.

1. $16 + 12 \div 4 - 8$

2. $-19 + (7 + 4)3 =$

3. $18 + (-7) \bullet (32 - 6) =$

4. $27 \div (6 + 3) - 18$

5. $5 - 2 + 8$

6. $-3 + 2(-6 \div 3)2$

7. $48 \div (32 - 26) \cdot 5$

8. $-4.5 \bullet (-0.53) + (-1)$

9. $85 \div 5 + (8+9) \cdot 2 =$

10. $23 + (-16) \div 42 \cdot 5 - (-3) =$

11. $-50 \div (-10) + (5 - 3)4 =$

Why didn't the two 4's feel like dinner?
Because they already 8.

Week 3: Equivalent Fractions & Equivalent Ratios
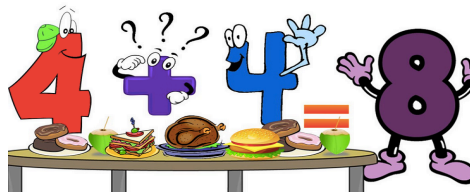
Simplify each fraction to its lowest terms

1. $\dfrac{7}{14} = \dfrac{1}{2}$

2. $\dfrac{4}{20} =$

3. $\dfrac{14}{21} =$

4. $\dfrac{12}{21} =$

5. $\dfrac{12}{18} =$

6. $\dfrac{5}{50} =$

7. $\dfrac{30}{72} =$

8. $\dfrac{4}{40} =$

9. $\dfrac{12}{30} =$

10. $\dfrac{30}{55} =$

11. $\dfrac{24}{33} =$

12. $\dfrac{24}{40} =$

13. $\dfrac{40}{110} =$

14. $\dfrac{36}{40} =$

15. $\dfrac{2}{18} =$

16. $\dfrac{10}{120} =$

17. $\dfrac{8}{96} =$

18. $\dfrac{50}{60} =$

19. $\dfrac{10}{45} =$

20. $\dfrac{8}{64} =$

21. $\dfrac{9}{27} =$

22. $\dfrac{7}{56} =$

23. $\dfrac{45}{54} =$

24. $\dfrac{30}{55} =$

25. $\dfrac{20}{35} =$

26. $\dfrac{30}{36} =$

27. $\dfrac{10}{24} =$

28. $\dfrac{10}{20} =$

29. $\dfrac{35}{56} =$

30. $\dfrac{4}{8} =$

31. $\dfrac{8}{56} =$

32. $\dfrac{27}{99} =$

33. $\dfrac{4}{12} =$

34. $\dfrac{3}{6} =$

35. $\dfrac{9}{54} =$

36. $\dfrac{9}{18} =$

37. $\dfrac{3}{24} =$

38. $\dfrac{6}{16} =$

39. $\dfrac{24}{42} =$

40. $\dfrac{15}{21} =$

Fill in the blanks to make equivalent ratios.

1. $20 : 48 = 5 : \rule{1cm}{0.15mm}$

2. $36 : 3 = \rule{1cm}{0.15mm} : 1$

3. $18 : 27 = 2 : \rule{1cm}{0.15mm}$

4. $1 : 8 = 7 : \rule{1cm}{0.15mm}$

5. $1 : \rule{1cm}{0.15mm} = 3 : 6$

6. $7 : 8 = 49 : \rule{1cm}{0.15mm}$

7. $45 : 10 = 9 : \rule{1cm}{0.15mm}$

8. $5 : 35 = \rule{1cm}{0.15mm} : 7$

9. $99 : 63 = 11 : \rule{1cm}{0.15mm}$

10. $80 : 90 = 8 : \rule{1cm}{0.15mm}$

11. $12 : 7 = \rule{1cm}{0.15mm} : 56$

12. $5 : 11 = \rule{1cm}{0.15mm} : 22$

13. $5 : 1 = \rule{1cm}{0.15mm} : 5$

14. $9 : 10 = 81 : \rule{1cm}{0.15mm}$

15. $27 : 9 = 3 : \rule{1cm}{0.15mm}$

16. $\rule{1cm}{0.15mm} : 4 = 25 : 20$

17. $10 : 90 = \rule{1cm}{0.15mm} : 9$

18. $\rule{1cm}{0.15mm} : 8 = 9 : 24$

19. $7 : 2 = \rule{1cm}{0.15mm} : 14$

20. $\rule{1cm}{0.15mm} : 6 = 35 : 30$

1) $4h = 40$

2) $\frac{k}{2} = 16$

3) $n - 5 = 12$

4) $57 = 3g$

5) $11 = \frac{m}{7}$

6) $13 = r + 8$

7) $8c = 28$

8) $d - 5 = 25$

9) $b + 7 = 78$

10) $n + 15 = 78$

11) $x - 7 = 56$

12) $y + 8 = 2$

13) $\frac{y}{6} = 1.6$

14) $r + 3.89 = 12$

15) $7.8 = c - 15.56$

16) $1.2g = 78$

17) $\frac{r}{0.8} = 1.7$

18) $n + 6.8 = 24.46$

Week 5: Converting fractions to decimals

Convert each fraction to a decimal.

$\dfrac{12}{20} =$

$\dfrac{6}{10} =$

$\dfrac{2}{20} =$

$\dfrac{19}{20} =$

$\dfrac{6}{20} =$

$\dfrac{1}{4} =$

$\dfrac{1}{20} =$

$\dfrac{1}{2} =$

$\dfrac{5}{10} =$

$\dfrac{3}{20} =$
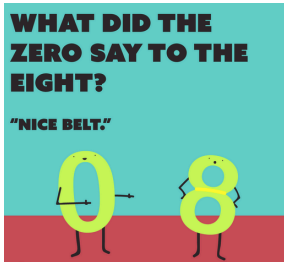
$\dfrac{10}{20} =$

$\dfrac{2}{4} =$

$\dfrac{3}{6} =$

$\dfrac{7}{8} =$

$\dfrac{3}{12} =$

$\dfrac{13}{20} =$

$\dfrac{15}{20} =$

$\dfrac{3}{4} =$

$\dfrac{2}{10} =$

$\dfrac{7}{20} =$

WHAT DID THE ZERO SAY TO THE EIGHT?

"NICE BELT."
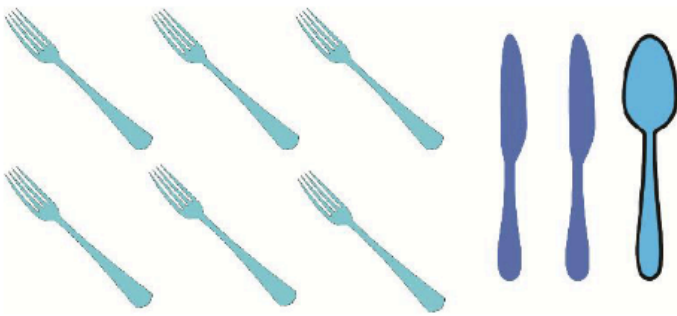
Week 6:   Mixed Review

1. Write a ratio in two ways to describe the relationship of the number of forks to the number of spoons.

   The ratio that describes the relationship of the number of forks to the number of spoons is _____ to _____ or _____ : _____.

2. A bakery can make 30 donuts every 15 minutes.

   The rate at which the bakery makes donuts is_____ donuts per minute.

3. Points A, B, C, D, and E are graphed on a coordinate plane.
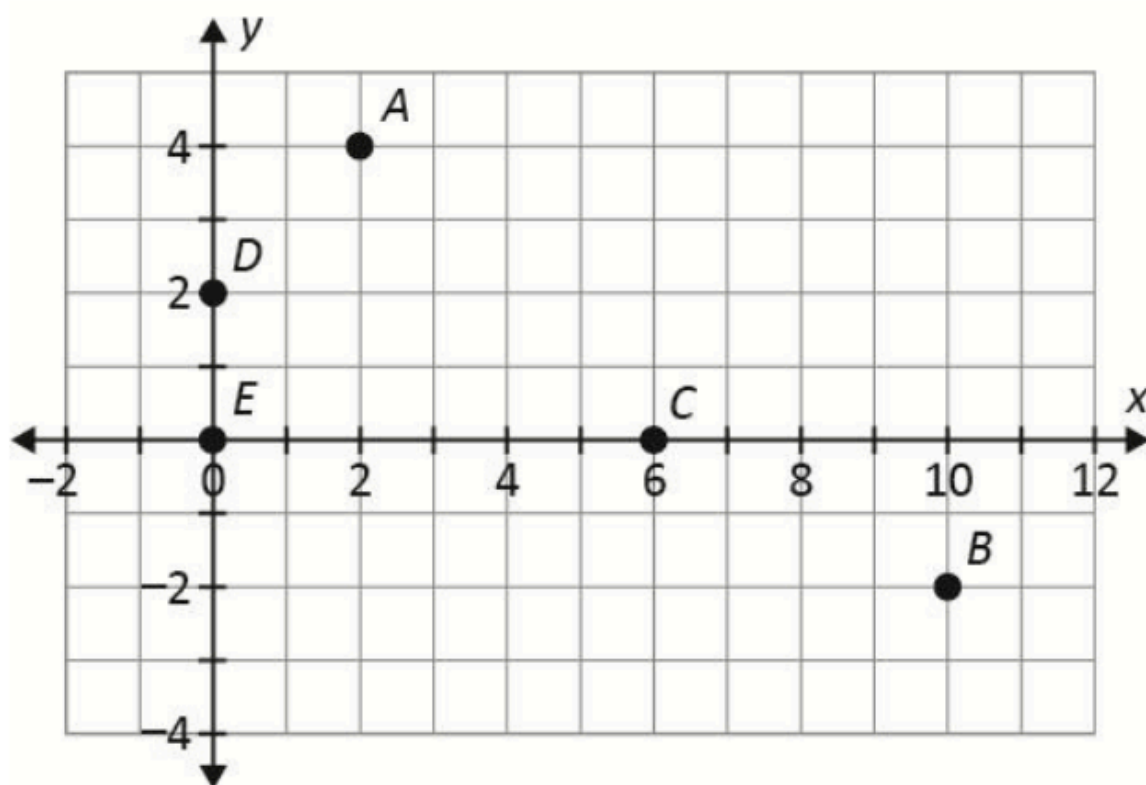
Describe the location of the points on the graph.

Point A is located at (___, ___).

Point B is located at (___, ___).

Point C is located at (___, ___).

Point D is located at (___, ___).

Point E is located at (___, ___).

4. Mr. Carver is mixing soil for his garden. He wants the soil to be in the proportion of 1 part sand to $3\frac{1}{2}$ parts compost.

Part A

Complete the table to show how much compost he needs to add for each amount of sand to maintain the proportional relationship.

Sand	1	3	5	7
Compost	$3\frac{1}{2}$			

Part B

What is the unit rate of parts compost to parts sand? What is the unit rate of parts sand to parts compost?
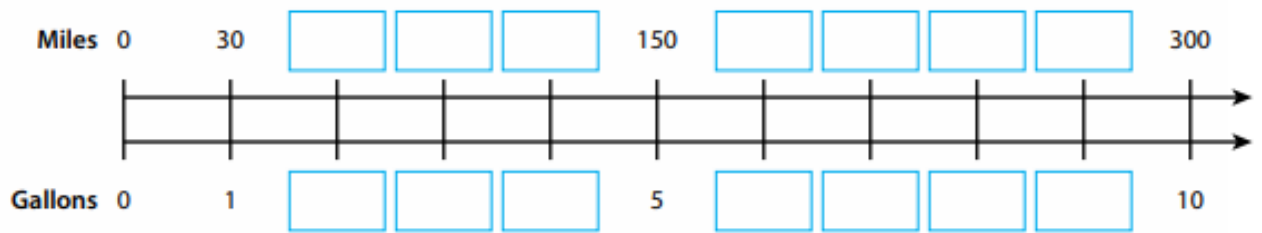
_____

5. Divide.

$$1\frac{1}{4} \div \frac{1}{2}$$

A. $\frac{5}{8}$

B. 2

C. $2\frac{1}{2}$

D. 3

6. A car can travel 300 miles on 10 gallons of gas. The ratio is 300 miles to 10 gallons.

Miles 0   30   ☐☐☐   150   ☐☐☐☐   300
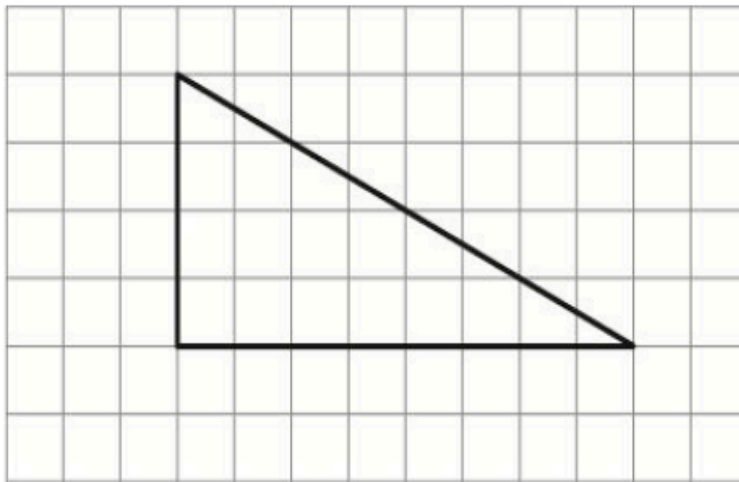
Gallons 0   1   ☐☐☐   5   ☐☐☐☐   10

7. What value of x makes the equation true?

$$7x = 84$$
$$x = \underline{\quad}$$

8. Each square on the grid has a length of 1 unit.

What is the area of the triangle?

A. 16 square units

B. 22.5 square units

C. 32 square units

D. 45 square units

9. Choose all of the expressions that are equivalent to $2\frac{1}{2} \div 1\frac{2}{6}$.

A $\frac{5}{2} \times \frac{6}{8}$

B $\frac{2}{5} \times \frac{6}{8}$

C $1\frac{2}{6} \div 2\frac{1}{2}$

D $\frac{5}{2} \div \frac{8}{6}$

10. Kado spent $1\frac{2}{3}$ hours painting a fence. Then he spent $\frac{4}{5}$ of an hour walking his dog. How much longer did he spend painting than walking?

A $\frac{2}{15}$ hour

B $\frac{13}{15}$ hour

C $1\frac{2}{15}$ hours

D $1\frac{13}{15}$ hours

11. What is $3\frac{1}{4} + \frac{3}{8}$?

Show your work.

12. What is the result when 8.06 is subtracted from 22.92?

Show your work.

13. What is 1,476 divided by 12?

Show your work.

14. Which situations would be represented by a negative number? Choose all that apply.

A   23 degrees above 0°F

B   100 feet below sea level

C   owing $200 for a new bicycle

D   earning 45 points in a quiz game

E   a deposit of $45 in your savings account

15. Nadia mails 3 packages. The first weighs 12.329 pounds, the second weighs 10.45 pounds, and the third weighs 19.2 pounds. What is the total weight of the packages?

Show your work.