



Summer Math Packet – Pre-Algebra

You should complete this packet if you are entering 7th Grade Math or 6th Accelerated Math in 2026. (7th Accelerated students should complete the 8th Grade Packet.)

The Middle School Math Department is asking you to do summer math to make the transition back to class easier for you. Please wait to complete this packet until the end of summer, ideally during the last two weeks before school starts. Check the answers that are available to you at the end of the packet. If you find that you need the answer sheet to answer the questions, then you may want to review those topics before school begins. Your teacher will spend little time reviewing the skills and concepts in this packet. Expect an evaluation on this in the first week of school. Good luck and see you in August!

Instructions:

1. Use a pencil.
2. Do all of your work on **separate paper**. It must be graph paper. Copy the problem onto your paper. To save paper, you do not have to print this packet unless you want to. We will only collect your work.
3. Show your work, even if you are capable of doing it in your head. Show us your steps and thought process on paper. Just writing an answer is not sufficient for most problems.
4. Check your answers with the back of the packet. If any problems are incorrect, put an X through your incorrect work (**but do not erase it**) and rework the problem again right beside your old work.
5. The packet must be completed and brought to class by the second day of school to be graded. This will count as an assignment. Since most answers are provided, it will mostly be graded on thoroughness of showing your work, neatness, and following directions.
6. **Read directions carefully.**

Section 1: Number Basics

Multiplication Tables

Coming into this course, you should know all your multiplication tables up through 12 times 12. You should have them memorized so that you have a 2 second recall or less. If you cannot do this, make or buy a set of multiplication flash cards and practice these until you can. Time yourself as you do these tables. Check to be sure that you can complete each table correctly **in less than 3 minutes**.

X	3	7	6	11	8	9	5	12	4
8									
6									
5									
11									
3									
7									
9									
12									
4									

X	4	9	12	6	7	8	5	11	3
12									
5									
11									
3									
7									
9									
6									
4									
8									

Factors

Factors are numbers that are multiplied to find a product. Here are some rules for knowing if a number is a factor. You *should* memorize these!

- No number is divisible by 0.
- All numbers are divisible by 1.
- A number is divisible by 2 if it is even.
- A number is divisible by 3 if the sum of its digits is divisible by 3.
- A number is divisible by 4 if the number created by the last two digits is divisible by 4.
- A number is divisible by 5 if it ends in 5 or 0.
- A number is divisible by 6 if it is divisible by both 2 and 3.
- A number is divisible by 9 if the sum of its digits is divisible by 9.
- A number is divisible by 10 if it ends in 0.

List **all** the factors of these numbers. Typically they are listed in ascending order of magnitude.

Examples:

15: 1, 3, 5, 15

32: 1, 2, 4, 8, 16, 32

1. 18

2. 30

3. 10

4. 75

Multiples

A multiple is a number that may be divided by another number with no remainder.

Examples: 8 is a multiple of 2 because $2 \times 4 = 8$; 8 is divisible by 2

20 is a multiple of 4 because $4 \times 5 = 20$; 20 is divisible by 4

Find the first four multiples of the following numbers.

5. 21

6. 7

Order of Operations (CHOOSE 5)

There is a specific order to use when simplifying ALL expressions in math. A way to remember the order of operations is PEMDAS. It tells us to do all math in the following order.

P (simplify anything in the **parentheses or other group symbol first**)

E (compute any **exponents**)

M/D (**multiply** and/or **divide** as they appear going from left to right)

A/S (**add** and/or **subtract** as they appear going from left to right)

Use these rules to simplify the following expressions. (**CHOOSE ANY 5**)

7. $2 + 3^2 \times 5$

10. $12 - 8 + 4$

13. $7 \cdot 3 - 14 \div 2$

8. $8 - (2 + 3 \cdot 5)$

11. $4 + 16 \div 4^2 - 3$

14. $20 - 5 \div 5$

9. $8 - 2^4 + (8 + 1)^2 \div 3$

12. $21 - 15 \div 3 \times 2$

15. $(5 + 5) + 2^3 \times 3$

Section 2: Fractions

Equivalent Fractions

You can simplify some fractions to equivalent fractions in **lowest terms**. To **reduce** a fraction to its lowest terms, divide both the numerator and the denominator by the **greatest common factor**. This is the same as multiplying the fraction by 1 (the value of the fraction does not change)! A fraction is in simplest terms when 1 is the only number that divides both the numerator and the denominator evenly.

Example: $\frac{8}{10} = \frac{8 \div 2}{10 \div 2} = \frac{4}{5}$

Simplify.

1. $\frac{60}{80} =$

2. $\frac{40}{56} =$

3. $\frac{72}{120} =$

4. $\frac{77}{42} =$

5. $\frac{25}{45} =$

6. $\frac{9}{21} =$

Compare and Order Fractions and Mixed Numbers

Compare each pair of fractions. Find a common denominator and write their equivalent fractions. Use $<$, $>$, or $=$

7. $\frac{3}{8}$ _____ $\frac{4}{9}$

9. $\frac{6}{7}$ _____ $\frac{3}{4}$

11. $\frac{2}{3}$ _____ $\frac{5}{8}$

8. $\frac{3}{7}$ _____ $\frac{4}{5}$

10. $\frac{9}{27}$ _____ $\frac{1}{3}$

12. $\frac{3}{4}$ _____ $\frac{7}{10}$

Addition and Subtraction of Mixed Numbers and Fractions (CHOOSE 6)

Add or subtract where indicated. Remember to create a common denominator if the denominators are not already the same. Remember that when subtracting you may have to “borrow”. When finished, **simplify/reduce** your answer if possible.

13. $11\frac{4}{9} + 4\frac{1}{3} =$

14. $1\frac{3}{7} + 8\frac{7}{8} =$

15. $2\frac{1}{4} + 3\frac{1}{8} =$

16. $12\frac{1}{5} + 7\frac{3}{4} =$

17. $6\frac{4}{15} + 3\frac{1}{3} =$

18. $2\frac{9}{11} + \frac{5}{8} =$

19. $\frac{3}{4} - \frac{5}{7} =$

20. $10\frac{1}{6} - 4\frac{5}{12} =$

21. $\frac{7}{9} - \frac{1}{4} =$

Multiplication of Fractions (CHOOSE 5)

Multiply the following fractions. There are also mixed numbers in the following problems so be sure to study the examples to remind yourself of the necessary steps. Also, it is possible to cancel when multiplying so look at the examples to see if that helps you.

Example 1: Multiply and then cancel

$$\frac{3}{5} \times \frac{2}{9}$$
$$\frac{3}{5} \times \frac{2}{9} = \frac{3 \times 2}{5 \times 9} = \frac{6}{45} = \frac{2}{15}$$

Example 2: Cancel and then multiply

$$\frac{3}{8} \times \frac{4}{9}$$
$$\frac{3}{8} \times \frac{4}{9} = \frac{\overset{1}{\cancel{3}} \times \overset{1}{\cancel{4}}}{\underset{2}{\cancel{8}} \times \underset{3}{\cancel{9}}} = \frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$$

Example 3: Multiply mixed numbers. You MUST change to improper fractions first!

$$1\frac{3}{5} \times 2\frac{1}{4}$$

$$\text{(Without canceling)} \quad \frac{8}{5} \times \frac{9}{4} = \frac{72}{20} = \frac{18}{5} = 3\frac{3}{5}$$

$$\text{(With canceling)} \quad \frac{\overset{2}{\cancel{8}}}{5} \times \frac{\underset{1}{\cancel{4}}}{9} = \frac{2}{5} \times \frac{9}{1} = \frac{18}{5} = 3\frac{3}{5}$$

Multiply and then be sure your final answer is simplified/reduced. **(CHOOSE 5)**

22. $\frac{1}{10} \times \frac{4}{7} =$

26. $\frac{3}{7} \times \frac{7}{9} =$

23. $\frac{1}{4} \times \frac{2}{5} =$

27. $\frac{5}{11} \times \frac{7}{10} =$

24. $\frac{5}{12} \times \frac{4}{15} =$

28. $2\frac{1}{3} \times 9 =$

25. $\frac{3}{35} \times \frac{5}{8} =$

29. $1\frac{3}{8} \times 14 =$

Section 3: Expressions

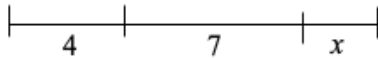
Expressions are mathematical statements made up of numbers, variables, and/or operations. When the value of a number is not known a variable is used. Write expressions for the following statements using a variable for the unknown.

1. The sum of a number and 8 _____

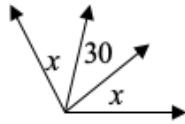
2. 2 times a number _____

3. 16 divided by a number _____

4. Write an expression for the length of the segment below _____



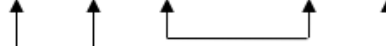
5. Write an expression for the obtuse angle below. _____



Section 4: Decimals

Place Value

Knowing the size of a number is important. We understand the size of a number based off of its place value. It is vital that you have the place value names memorized going into 7th grade.

Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths	Ten Thousandths	Hundred Thousandths	Millionths
Millions Period			Thousands Period			Ones Period								
														

Reading and Writing Decimals

To read a **decimal**, ignore the decimal temporarily and read the number as though it were a whole number. Then name the place value of the last digit. For example, you would read 0.53 as fifty-three hundredths, or 0.1326 as one thousand, three hundred twenty-six ten thousandths.

To read a decimal that also has a whole part (a number in front of the decimal other than 0).

- Read the whole number part
- Read the **decimal point** as the word “and”
- Read the decimal part of the number as a whole number and then name the place value of the last digit

For example, 23.705 would be twenty-three and seven hundred five thousandths

Write out in words how you would read the following numbers. Please **check** your spelling.

1. 4.672 2. 2.0063 3. 14,673.5278

Write the following as decimals.

4. three tenths 5. Ten and four hundredths 6. Fifteen thousandths

Ordering Decimals

Look carefully at the following set of numbers and put each set in order from least to greatest. Look at the digit on the left first, then the next, and so on.

7. 0.32 0.203 0.23 0.302 8. 1.04 1.054 1.004 1.045

Adding and Subtracting Decimals (CHOOSE 5)

Answer the following addition and subtraction problems. Remember to line up decimals when adding and subtracting so that you are lining up the “parts” that are the same size.

Examples:

$$\begin{array}{r} 8.9 \\ + 2.6 \\ \hline 11.5 \end{array}$$

$$\begin{array}{r} 3.7 \\ - 1.8 \\ \hline 1.9 \end{array}$$

$$0.43 - 0.32 = \longrightarrow \begin{array}{r} 0.43 \\ - 0.32 \\ \hline 0.11 \end{array}$$

9. $\begin{array}{r} 4.6 \\ + 0.3 \\ \hline \end{array}$

10. $\begin{array}{r} 0.50 \\ + 0.24 \\ \hline \end{array}$

11. $4.32 + 0.061 =$

12. $29.8 + 4.7 =$

13. $\begin{array}{r} 8.8 \\ - 2.3 \\ \hline \end{array}$

14. $\begin{array}{r} 19.2 \\ - 9.6 \\ \hline \end{array}$

15. $0.24 - 0.19 =$

16. $26.5 - 7.09 =$

Multiplying Decimals (CHOOSE 5)

To multiply decimals it is not necessary to line up the decimals first. Multiply as if there are no decimals. At the end, you have to figure out the size of the number. You count the decimal places to understand the relative size and place it based on counting spaces to equal the number of decimal spots.

Examples:

a. $\begin{array}{r} 2.3 \\ \times 0.7 \\ \hline 1.61 \end{array}$

b. $\begin{array}{r} 0.042 \\ \times 1.6 \\ \hline 0.0672 \end{array}$

c. $(0.04)(6.8) = \longrightarrow \begin{array}{r} 0.04 \\ \times 6.8 \\ \hline 0.272 \end{array}$

17. $\begin{array}{r} 93 \\ \times 0.16 \\ \hline \end{array}$

18. $\begin{array}{r} 0.01 \\ \times 8.4 \\ \hline \end{array}$

19. $\begin{array}{r} 2.003 \\ \times 1.2 \\ \hline \end{array}$

20. $4.23 \times 0.06 =$

21. $(0.003)(6) =$

22. $1.2 \times 5.6 =$

Dividing Decimals (CHOOSE 5)

Division and fractions are similar. Division can be written as:

$$26 \div 13 \text{ or } \frac{26}{13} \qquad 54 \div 9 \text{ or } \frac{54}{9}$$

As a result, decimal numbers that need to be divided can be thought of as a fraction.

$$1.55 \div 0.5 \text{ can be thought of as } \frac{1.55}{0.5}$$

Creating fractions can be helpful because it allows us to think more easily in terms of the “giant 1”. You would always want to multiply by a power of 10 (10, 100, 1000, 10000, etc.) in order to make the denominator a whole number. So,

$$\frac{1.55}{0.5} \text{ would become } \frac{1.55 \times 10}{0.5 \times 10} = \frac{15.5}{5}$$

Notice that we only focused on “getting rid of” the decimals in the denominator. Once we have a whole number divisor, we divide as we normally would. You can do the problems as a fraction reducing or as long division.

Example: $2.68 \div 0.4 = 6.7$

$$36 \div 0.03 = 1200$$

$$\frac{2.68}{0.4} = \frac{26.8}{4} = \frac{13.4}{2} = 6.7$$

Multiply the divisor and dividend by 100.

$$\begin{array}{r} 0.03 \overline{)36.00} \\ \underline{0.06} \\ 0.00 \end{array}$$

Move decimal points 2 places.

$$\begin{array}{r} 1200. \\ 3 \overline{)3600.} \\ \underline{3} \\ 06 \\ \underline{6} \\ 0 \end{array}$$

Fill quotient with zeros up to the decimal point.

23. $0.49 \div 0.7 =$

24. $56 \div 0.14 =$

25. $\frac{672.24}{8} =$

26. $\frac{3.4}{1.36} =$

27. $1.89 \div 3.6 =$

28. $8.91 \div 1.62 =$

29. $25.3 \div 101.2 =$

30. $\frac{58.8}{7} =$

31. $\frac{20.72}{3.7} =$

Section 5: Equations

Solve One-Step Equations: Multiplication/Division (CHOOSE 8)

Show your work. (CHOOSE 8)

1. $\frac{x}{2} = 9$

2. $4 = \frac{x}{4}$

3. $5x + 5 = 30$

4. $\frac{3x}{20} = 12$

5. $5x = 15$

6. $8x = 40$

7. $60 = 20x$

8. $7x = 14$

9. $9x = 72$

10. $4 = \frac{x}{11}$

11. $210 = 7x$

12. $12x = 60$

Solve One-Step Equations: Add/Subtract (CHOOSE 8)Show your work. **(CHOOSE 8)**

13. $x - 5 = 9$

14. $y - 12 = 0$

15. $q + 8 = 25$

16. $f - 22 = 14$

17. $8 + s = 10$

18. $r - 3.2 = 1.7$

19. $8.9 = v + 7.3$

20. $\frac{1}{3} + n = \frac{5}{6}$

21. $\frac{2}{3} = \frac{1}{4} + g$

22. $7.6 = x - 2.8$

23. $\frac{1}{4} + x = \frac{1}{2}$

24. $\frac{2}{5} = x - \frac{1}{3}$

Percent as a Fraction in Simplest Form

25. 35%

26. 81.4%

27. 210%

Write the Fraction or Mixed Number as a Percent

28. $\frac{37}{50}$

29. $\frac{21}{25}$

30. $1\frac{4}{5}$

31. $\frac{19}{40}$

Find the Percent of the Number. (CHOOSE 8)

32. 25% of 80

33. 60% of 20

34. 30% of 70

35. 35% of 80

36. 62% of 50

37. 3% of 90

38. 91% of 60

39. 50% of 64

40. 40% of 35

41. 13% of 58

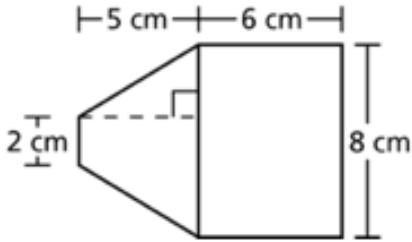
42. 52% of 44

43. 250% of 18

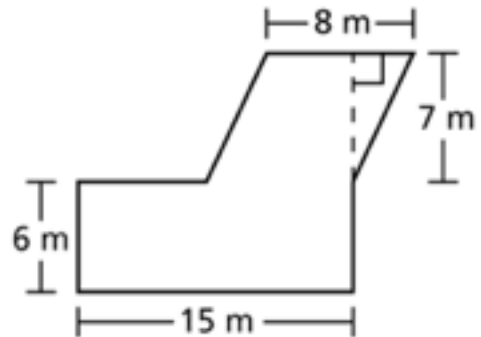
Section 6: Area and Graphing

Find the area of each shape.

1.

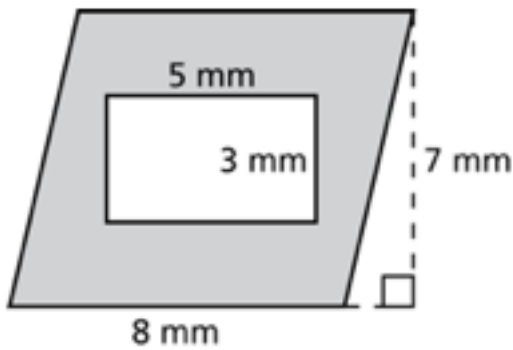


2.



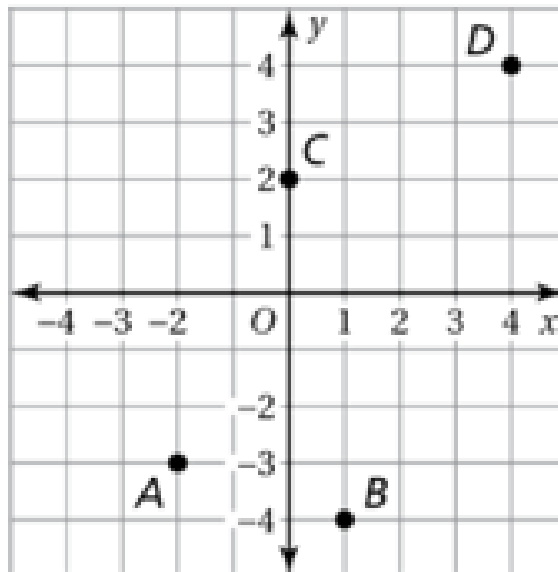
Find the area of the shaded region.

3.



Write an ordered pair corresponding to the point. Use the correct form for coordinate pairs (x,y).

4. Point *A*
5. Point *B*
6. Point *C*
7. Point *D*



7th Grade Summer Math Packet Answers

Section 1

1. 1, 2, 3, 6, 9, 18
2. 1, 2, 3, 5, 6, 10, 15, 30
3. 1, 2, 5, 10
4. 1, 3, 5, 15, 25, 75
5. 21, 42, 63, 84
6. 7, 14, 21, 28
7. 47
8. -9
9. 19
10. 8
11. 2
12. 11
13. 14
14. 19
15. 34

Section 2

1. $\frac{3}{4}$
2. $\frac{5}{7}$
3. $\frac{3}{5}$
4. $\frac{11}{6} = 1\frac{5}{6}$
5. $\frac{5}{9}$
6. $\frac{3}{7}$
7. $\frac{27}{72} < \frac{32}{72}$
8. $\frac{15}{35} < \frac{28}{35}$
9. $\frac{24}{28} > \frac{21}{28}$
10. $\frac{1}{3} = \frac{1}{3}$
11. $\frac{16}{24} > \frac{15}{24}$
12. $\frac{15}{20} > \frac{14}{20}$
13. $15\frac{7}{9}$

14. $10\frac{17}{56}$
15. $5\frac{3}{8}$
16. $19\frac{19}{20}$
17. $9\frac{3}{5}$
18. $3\frac{39}{88}$
19. $\frac{1}{28}$
20. $5\frac{3}{4}$
21. $\frac{19}{36}$
22. $\frac{2}{35}$
23. $\frac{1}{10}$
24. $\frac{1}{9}$
25. $\frac{3}{56}$
26. $\frac{1}{3}$
27. $\frac{7}{22}$
28. 21
29. $\frac{77}{4} = 19\frac{1}{4}$

Section 3

1. $n + 8$
2. $2n$
3. $\frac{16}{n}$ or $16 \div n$
4. $11 + x$
5. $2x + 30$

Section 4

1. four and six-hundred seventy two thousandths
2. two and sixty-three ten-thousandths
3. fourteen thousand six-hundred seventy

- three and five thousand two-hundred seventy eight ten-thousandths
4. 0.3
5. 10.04
6. 0.015
7. 0.203, 0.23, 0.302, 0.32
8. 1.004, 1.04, 1.045, 1.054
9. 4.9
10. 0.74
11. 4.381
12. 34.5
13. 6.5
14. 9.6
15. 0.05
16. 19.41
17. 14.88
18. 0.084
19. 2.4036
20. 0.2538
21. 0.018
22. 6.72
23. 0.7
24. 400
25. 84.03
26. 2.5
27. 0.525
28. 5.5
29. 0.25
30. 8.4
31. 5.6

Section 5

1. 18
2. 16
3. 5
4. 80
5. 3
6. 5
7. 3
8. 2

9. 8
10. 44
11. 30
12. 5
13. 14
14. 12
15. 17
16. 36
17. 2
18. 4.9
19. 1.6
20. $\frac{1}{2}$
21. $\frac{5}{12}$
22. 10.4
23. $\frac{1}{4}$
24. $\frac{11}{15}$
25. $\frac{7}{20}$
26. $\frac{407}{500}$
27. $2\frac{1}{10}$
28. 74%
29. 84%
30. 180%
31. 47.5%
32. 20
33. 12
34. 21
35. 28
36. 31
37. 2.7
38. 54.6
39. 32
40. 14
41. 7.54
42. 22.88
43. 45

Section 6

1. 73 cm²
2. 146 m²
3. 41 mm²

4. $(-2, -3)$

5. $(1, -4)$

6. $(0, 2)$

7. $(4, 4)$