

Summer Math Packet

Rising 8th Grade

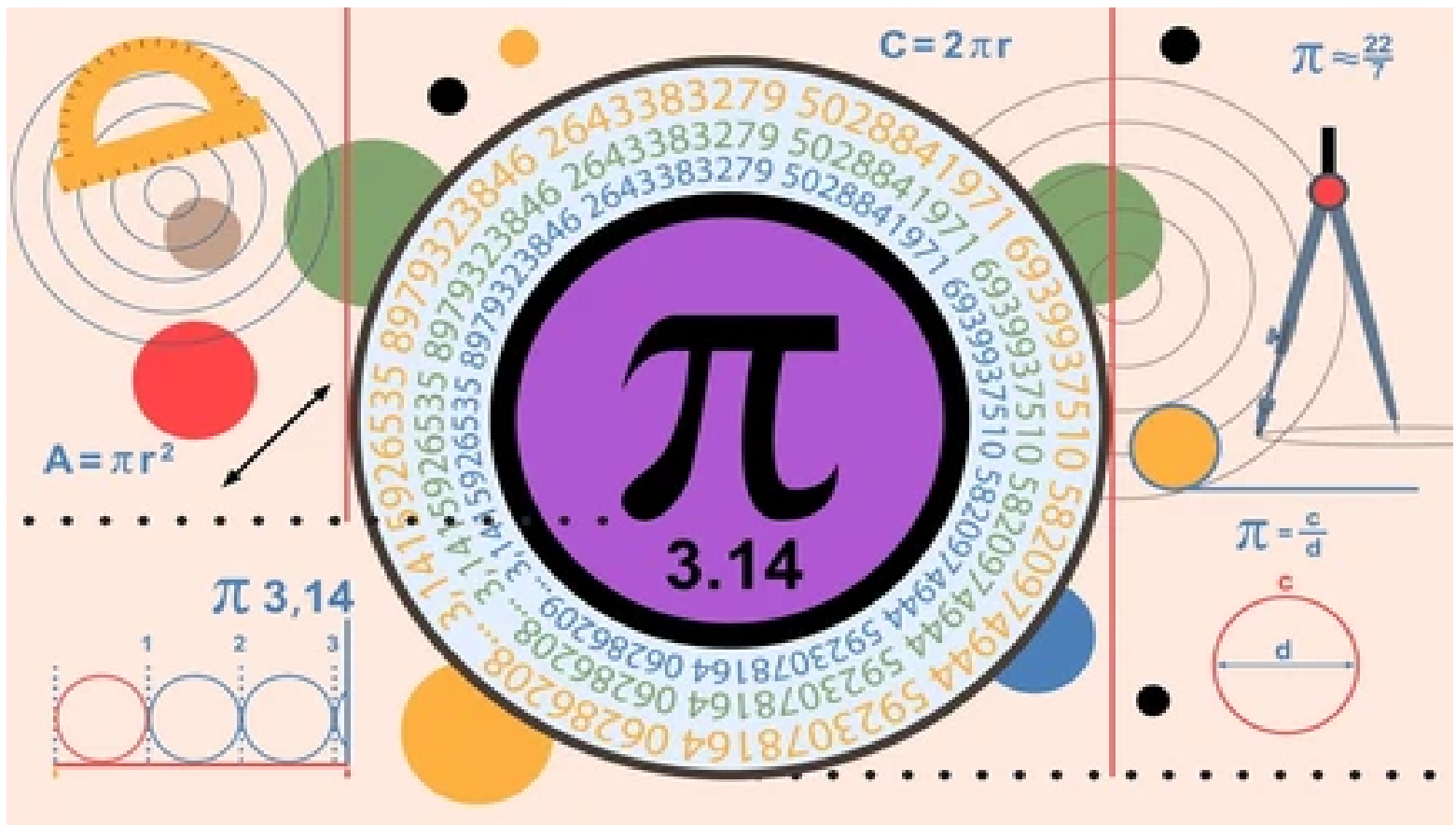
This summer packet will help you review important math skills and get ready for 8th grade. Try to work in 30 minute chunks and then take a short break. Maybe complete a little each week. Show all your work, and focus on the sections that are most challenging for you.

Name: _____

Test Grade Date Due: August 20, 2026

Table of Contents

1. Integer Operations
2. Fractions and Decimals
3. Ratios and Proportions
4. Expressions and Equations
5. Geometry
6. Statistics and Probability
7. Word Problems
8. Challenges



Section 1: Integer Operations

Add and Subtract Integers



1. $-12 + 7 =$ _____
2. $15 + (-19) =$ _____
3. $-8 - 14 =$ _____
4. $22 - (-6) =$ _____
5. $-17 + 25 =$ _____

Multiply and Divide Integers

1. $(-6)(8) =$ _____
2. $(-9)(-4) =$ _____
3. $72 \div (-9) =$ _____
4. $(-56) \div -7 =$ _____
5. $(-3)(-5)(2) =$ _____

Order of Operations

1. $18 - 4(2 + 3) =$ _____
 2. $7 + 12 \div 3 - 2 =$ _____
 3. $(-2)^3 + 5 =$ _____
 4. $6[4 - (8 - 5)] =$ _____
-

Section 2: Fractions and Decimals

Add and Subtract Fractions

1. $\frac{3}{4} + \frac{1}{8} =$ _____
2. $\frac{5}{6} - \frac{1}{3} =$ _____
3. $2\frac{1}{5} + 1\frac{3}{10} =$ _____
4. $4\frac{1}{2} - 2\frac{3}{4} =$ _____

Multiply and Divide Fractions

1. $\frac{2}{3} \times \frac{9}{10} =$ _____
2. $\frac{5}{8} \times 4 =$ _____
3. $\frac{3}{5} \div \frac{9}{10} =$ _____
4. $2\frac{1}{4} \div \frac{3}{4} =$ _____

Decimals and Percents

1. Write 0.45 as a percent: _____
2. Write 72% as a decimal: _____
3. Find 25% of 160: _____
4. A shirt costs \$40 and is on sale for 15% off. What is the sale price? _____

Section 3: Ratios and Proportions

1. Simplify the ratio 18:24.
 2. If 3 notebooks cost \$9, how much will 7 notebooks cost?
 3. A recipe uses 2 cups of flour for every 5 cookies. How many cups of flour are needed for 20 cookies?
 4. A car travels 180 miles in 3 hours. What is the unit rate?
-

Section 4: Expressions and Equations

Simplify Expressions

1. $4x + 3x - 5 =$ _____
2. $7a - 2 + 5a + 9 =$ _____
3. $3(2x + 4) =$ _____
4. $5(y - 2) + 7 =$ _____

Solve Equations

5. $x + 12 = 31$
6. $5x = 45$
7. $3x - 7 = 20$
8. $2x + 9 = 25$
9. $4(x - 2) = 24$

Inequalities

10. Solve and graph:
 $(x - 5 > 8)$
 11. Solve and graph:
 $(3x < 18)$
-

Section 5: Geometry

Area and Perimeter

1. Find the perimeter of a rectangle with length 12 cm and width 5 cm.
-
2. Find the area of a triangle with base 10 ft and height 6 ft.

3. Find the circumference of a circle with radius 7 cm. Use ($\pi = 3.14$).

4. Find the area of a circle with diameter 12 in.

Volume

5. Find the volume of a rectangular prism with dimensions 4 cm, 6 cm, and 9 cm.

6. A cube has side lengths of 8 m. Find the volume.

Angle Relationships

7. Two angles are supplementary. One angle is 115° . Find the other angle.

8. Two angles are complementary. One angle is 37° . Find the other angle.

Section 6: Statistics and Probability

Mean, Median, Mode, Range

Use the data set below for questions 1–4:

12, 15, 18, 12, 20, 25, 18

1. Mean: _____
2. Median: _____
3. Mode: _____
4. Range: _____

Probability

5. A bag contains 4 red marbles, 3 blue marbles, and 5 green marbles.

What is the probability of choosing:

- a) A blue marble? _____
 - b) A green marble? _____
 - c) Not a red marble? _____
-

Section 7: Word Problems

1. Maria earns \$12 per hour babysitting. If she works 18 hours, how much money will she earn?
-

2. A movie theater sold 245 tickets on Friday and 318 tickets on Saturday. How many tickets were sold altogether?
-

3. A water bottle holds 0.75 liters of water. How much water is in 8 bottles?
-

4. The school cafeteria bought 15 boxes of apples. Each box contains 24 apples. How many apples were purchased?
-

5. A student scored 84%, 91%, and 88% on three tests. What is the average test score?

Section 8: Challenges

- Three times a number minus 8 equals twice the number plus 17. Find the number.
- The sum of three consecutive integers is 96. What are the integers?
- A store raises the price of a jacket by 20% and then discounts the new price by 20%. Is the final price the same as the original price? Explain.
- Find the next two numbers: 2, 6, 12, 20, 30, ?
 - — write a rule for the pattern.
- A phone originally costs \$480. It is discounted by 15%, then taxed 8% after the discount. What is the final price?
- Two numbers have:
 - sum = 41
 - difference = 13
 - Find the numbers.
- Twice a number plus its half equals 45. Find the number.
- Create your own real-world math problem and solve it.

Problem:

Solution:

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.)

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. $-48 - 64x$

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.

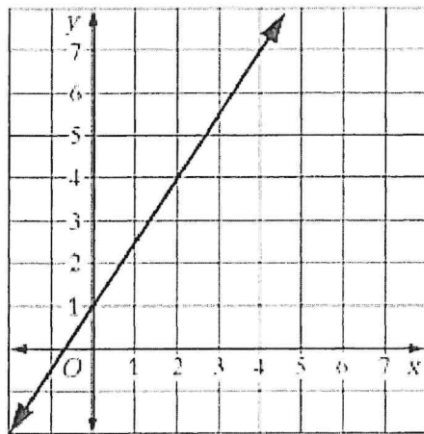
#15. 84, 128

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

#17. 216, 288, 72

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].

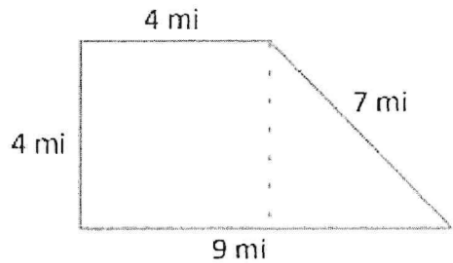
#12. $\frac{28 \text{ megabytes}}{5 \text{ seconds}}$

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

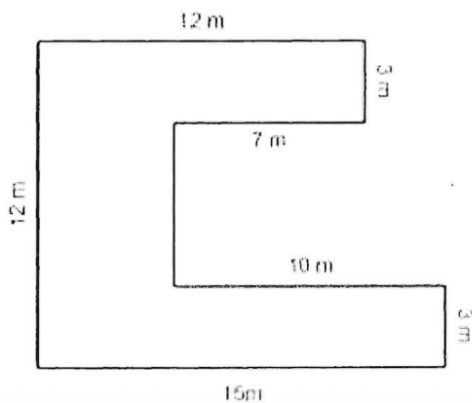
#14. $\frac{28 \text{ detentions}}{9 \text{ days}}$

Area, Perimeter, and Circumference

1. A circle has a radius of 3 inches. A) What is the diameter? B) What is the area of the circle? C) What is the circumference of the circle?
2. A circle has a diameter of 8 meters. A) What is the radius? B) What is the area of the circle? C) What is the circumference of the circle?



3. What is the perimeter of the figure to the right?
4. What is the area of the figure to the right?
5. What is the area of a parallelogram with a base of 9 inches and a height of 7.62 centimeters?
6. The area of a rectangle is 58 in^2 . The base is 8 inches long. What is the height?
7. A circle has a circumference of 14π inches. What is the diameter of the circle?
8. A triangle has an area of 160 mi^2 , and a base of 20 miles. What is the height?
9. What is the area of a triangle that has a base of 8 meters and a height of 7 meters?
10. A circle has an area of $49\pi \text{ m}^2$. What is the radius of the circle?



11. Find the perimeter of the shape to the left.
12. Find the area of the shape to the left.

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?