ADA MERRITT K-8 CENTER

8TH GRADE MATHEMATICS

SUMMER STUDY PACKET

THE FOLLOWING STUDY GUIDE INCLUDES MATHEMATICS CONTENT THAT IS A PRE-REQUISITE FOR NEXT SCHOOL YEAR. YOU WILL RECEIVE CREDIT FOR THE COMPLETION OF THE PACKET SO MAKE SURE TO ATTACH ALL OF THE WORK NECESSARY TO ANSWER EACH PROBLEM.

STUDENT NAME: _____

NAME _____ DATE _____ PERIOD _____

Lesson 2 Skills Practice

Powers and Exponents

Write each expression using exponents.

1. $2 \cdot 2 \cdot 2 \cdot 2$

2. $9 \cdot 9$

3. $7 \cdot 7 \cdot 5 \cdot 5 \cdot 5 \cdot 5$

4. $\frac{3}{8} \cdot \frac{3}{8} \cdot \frac{3}{8}$

5. $c \cdot \frac{1}{4} \cdot c \cdot \frac{1}{4} \cdot \frac{1}{4}$

6. $s \cdot 6 \cdot s \cdot s \cdot 6 \cdot 6 \cdot s$

7. $8 \cdot x \cdot 2 \cdot 2 \cdot 2 \cdot x \cdot 8$

8. $a \cdot (-4) \cdot b \cdot a \cdot b \cdot (-4) \cdot (-4)$

9. $\frac{1}{3} \cdot n \cdot 4 \cdot n \cdot \frac{1}{3} \cdot n \cdot 4 \cdot 4$

10. $9 \cdot 9 \cdot x \cdot w \cdot x \cdot y \cdot w \cdot 9 \cdot y$

Evaluate each expression.

11. 4^3

12. 2^5

13. $(-8)^3$

14. $\left(\frac{3}{5}\right)^4$

15. $2^8 - 3^2$

16. $2^3 \cdot 5^2$

17. $3^4 - (-4)^2$

18. $6 + 2^6$

19. $(-3)^3 \div 3^2$

ALGEBRA Evaluate each expression if $g = 2$ and $h = -3$.

20. g^4

21. $(g + h)^3$

22. $h^4 - h^3$

23. $g^3 + h^2$

24. $(g - h)^2 + h^2$

25. $h^4 - (h - g)^3$

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Lesson 6 Skills Practice

Scientific Notation

Write each number in standard form.

1. 6.7×10^{1}

2. 6.1×10^{4}

3. 1.6×10^{3}

4. 3.46×10^{2}

5. 2.91×10^{5}

6. 8.651×10^{7}

7. 3.35×10^{-1}

8. 7.3×10^{-6}

9. 1.49×10^{-7}

10. 4.0027×10^{-4}

11. 5.2277×10^{-3}

12. 8.50284×10^{-2}

Write each number in scientific notation.

13. 34

14. 273

15. 79,700

16. 6,590

17. 4,733,800

18. 2,204,000,000

19. 0.00916

20. 0.29

21. 0.00000571

22. 0.0008331

23. 0.0121

24. 0.00000018

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Lesson 6 Problem-Solving Practice

Scientific Notation

1. **MEASUREMENT** There are about 25.4 millimeters in one inch. Write this number in scientific notation.	2. **POPULATION** In the year 2000, the population of Rahway, New Jersey, was 26,500. Write this number in scientific notation.
3. **MEASUREMENT** One nanometer is 1.0×10^{-5} meter. Write this number in standard notation.	4. **PHYSICS** The speed of light is about 1.86×10^{5} miles per second. Write this number in standard notation.
5. **COMPUTERS** A CD can store about 650,000,000 bytes of data. Write this number in scientific notation.	6. **SPACE** The diameter of the Sun is about 1.39×10^{9} meters. Write this number in standard notation.
7. **BIOLOGY** The diameter of a certain virus is 0.000000028 meter. Write this number in scientific notation.	8. **MASS** The mass of planet Earth is about 5.98×10^{24} kilograms. Write this number in standard notation.

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Lesson 2 Skills Practice

Solve Two-Step Equations

Solve each equation. Check your solution.

1. $3n + 4 = 7$

2. $9 = 2s + 1$

3. $4c - 6 = 2$

4. $-4 = 2t - 2$

5. $3f - 12 = -3$

6. $8 = 4v + 12$

7. $5d - 6 = 9$

8. $2k + 12 = -4$

9. $-5 = 3m - 14$

10. $0 = 8z + 8$

11. $9a - 2 = -2$

12. $-8 + 4s = -16$

13. $-1 = 4 - 5x$

14. $5 = 9 - 2x$

15. $-2x + 12 = 14$

16. $1 - x = 8$

17. $-2 = -x + 4$

18. $11 = 2 - 3x$

19. $12 - 3x = 6$

20. $-6x + 5 = 17$

21. $13 = 18 - 5x$

22. $6x + 2 = 26$

23. $-18 = 4y + 10$

24. $-24 - a = -15$

25. $5z - 17 = 13$

26. $22 = 4 + 6e$

27. $-15 = 2r + 1$

28. $9k - 8 = 10$

29. $-27 = -7 - 4c$

30. $11 = 18 + 7f$

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Lesson 2 Extra Practice

Two-Step Equations

Solve each equation. Check your solution.

1. $2x + 4 = 14$

2. $5p - 10 = 0$

3. $5 + 6a = 41$

4. $\frac{x}{3} - 7 = 2$

5. $18 = 6q - 24$

6. $18 = 4m - 6$

7. $3r - 3 = 9$

8. $2x + 3 = 5$

9. $0 = 4x - 28$

10. $2x + 6 = -10$

11. $3z + 5 = 14$

12. $3x - 15 = 12$

13. $9a - 8 = 73$

14. $2x - 3 = 7$

15. $-a + 1 = 15$

16. $2y + 10 = 22$

17. $15 = 2y - 5$

18. $3c - 4 = 2$

19. $6 + 2p = 16$

20. $8 = 2 + 3x$

21. $4b + 24 = 24$

22. $5x - 6 = 19$

23. $-2x - 6 = 14$

24. $3x - 9 = -18$

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Lesson 2 Problem-Solving Practice

Solve Two-Step Equations

1. **SHOPPING** Jenna bought 5 reams of paper at the store for a total of \$21. The tax on her purchase was \$1. Solve $5x + 1 = 21$ to find the price for each ream of paper.	2. **CARS** It took Lisa 85 minutes to wash three cars. She spent x minutes on each car and 10 minutes putting everything away. Solve $3x + 10 = 85$ to find how long it took to wash each car.
3. **EXERCISE** Cole jogged the same distance on Tuesday and Friday, and 8 miles on Sunday, for a total of 20 miles for the week. Solve $2x + 8 = 20$ to find the distance Cole jogged on Tuesday and Friday.	4. **MOVING** Heather has a collection of 26 mugs. When packing to move, she put the same number of mugs in each of the first 4 boxes and 2 mugs in the last box. Solve $4x + 2 = 26$ to find the number of mugs in each of the first four boxes.
5. **TELEVISION** Burt's parents allow him to watch a total of 10 hours of television per week. This week, Burt is planning to watch several two–hour movies and four hours of sports. Solve $2x + 4 = 10$ to find the number of movies Burt is planning to watch this week.	6. **TRAVEL** Lawrence drives the same distance Monday through Friday commuting to work. Last week, Lawrence drove 25 miles on the weekend, for a total of 60 miles for the week. Solve $5x + 25 = 60$ to find the distance Lawrence drives each day commuting to work.
7. **MONEY** McKenna had \$32 when she got to the carnival. After riding 6 rides, she had \$20 left. Solve $32 - 6x = 20$ to find the price for each ride.	8. **GARDENING** Jack has 15 rosebushes. He has the same number of yellow, red, and pink bushes, and 3 multicolored bushes. Solve $3x + 3 = 15$ to find the number of yellow rosebushes Jack has.

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Lesson 4 Skills Practice

Solve Equations with Variables on Each Side

Solve each equation. Check your solution.

1. $3w + 6 = 4w$

2. $a + 18 = 7a$

3. $8c = 5c + 21$

4. $11d + 10 = 6d$

5. $2e = 4e - 16$

6. $7v = 2v - 20$

7. $4n - 6 = 10n$

8. $2y + 27 = 5y$

9. $8h = 6h - 14$

10. $18 - 2g = 4g$

11. $4x - 9 = 6x - 13$

12. $5c - 15 = 2c + 6$

13. $t + 10 = 7t - 14$

14. $8z + 6 = 7z + 4$

15. $2e - 12 = 7e + 8$

16. $9k + 6 = 8k + 13$

17. $2d + 10 = 6d - 10$

18. $-2a - 9 = 6a + 15$

19. $8 - 3k = 3k + 2$

20. $7t - 4 = 10t + 14$

21. $3c - 15 = 17 - c$

22. $14 + 3n = 5n - 6$

23. $3y + 5.2 = 2 - 5y$

24. $10b - 2 = 7b - 7.4$

25. $2m - 2 = 6m - 4$

26. $3g + 5 = 7g + 4$

27. $4s - 1 = 8 - 2s$

28. $9w + 3 = 4w - 9$

29. $6z - 7 = 2z - 2$

30. $3 - a = 4a + 12$

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Lesson 5 Extra Practice

Multi-Step Equations

Solve each equation. Check your solution.

1. $6(m-2)=12$

2. $4(x-3)=4$

3. $5(2d+4)=35$

4. $w+6=2(w-6)$

5. $3(b+1)=4b-1$

6. $7w-6=3(w+6)$

7. $4(k-6)=6(k+2)$

8. $3(x-0.8)=4x+4$

9. $\frac{5}{9}(g+18)=\frac{1}{6}g+3$

10. $4(c+12)=2c+18$

11. $7(d-2)=5(d+2)$

12. $5p-17=2(2p-7)$

13. $4(3z-2)=9z-7$

14. $7s+2=4(s+1)$

15. $6(k+1)=2k+7$

16. $6(n-1)=2(n+1)$

17. $\frac{1}{4}y-3=5-2y$

18. $\frac{2}{3}(3q+6)=8$